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IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

BESS BAIR, et al.,

No. C 17-06419 WHA

Plaintiffs,

v.

CALIFORNIA STATE DEPARTMENT OF
TRANSPORTATION, et al.,

Defendants.

**ORDER ON
CROSS-MOTIONS FOR
SUMMARY JUDGMENT
AND RELATED MOTIONS**

INTRODUCTION

In this NEPA action, both sides move for summary judgment. To the extent below stated, plaintiffs’ motion for summary judgment is **GRANTED**.

STATEMENT

This is the third NEPA action over the last eight years aimed at blocking a road improvement of Highway 101 where it winds through ancient old-growth redwoods. Old-growth redwoods are “trees with a diameter of 30 inches or larger, measured at breast height (54 inches above the ground)” (2017 AR 92). The controversy involves a one-mile stretch of Highway 101, one lane each way, through Richardson Grove State Park, located just south of Humboldt County. Some old-growths stand quite close to Highway 101. These trees are thousands of years old, and can measure 300 feet tall with a diameter sixteen feet wide (2017 AR 16, 93, 1838, 1916).

Extra-long trucks used elsewhere in California and the United States are now prohibited on this tightly-curved stretch of highway. Eighteen wheelers already run through the grove, but

1 the extra-long trucks will be longer. The fear is that, due to their size, they will drift into the
2 opposite lane of traffic or travel off the roadway onto unpaved shoulders. The highway measures
3 22 feet in width, eleven feet each way (2017 AR 16, 17, 93, 1804, 2039).

4 The extra-long trucks in question are authorized by the Surface Transportation Assistance
5 Act of 1982, 96 Stat. 2097 (“STAA”), 23 U.S.C. § 101 *et seq.* These STAA heavies, often longer
6 and carrying more volume than currently permitted semitrailer trucks, have either a 48-foot trailer
7 or a 53-foot trailer with a limit of 40 feet in distance from the kingpin of the cab to the rear axle of
8 the trailer. As a result of the Highway 101 prohibition, STAA heavies must detour around
9 Richardson Grove State Park to reach Humboldt County, purportedly hiking up costs to local
10 businesses and residents. For instance, STAA heavies going from Oakland to Eureka must travel
11 725 miles, detouring via I-5 through Oregon and then back south on Route 101, rather than going
12 the 279 miles on Highway 101 through Richardson Grove State Park (2017 AR 15–17, 58, 93, 95,
13 125, 1815).¹

14 The current effort to reshape Highway 101 began in 2006. In 2007, the Federal Highway
15 Administration assigned, and the California Department of Transportation and its director
16 (collectively “Caltrans”) assumed, environmental responsibilities for this project pursuant to 23
17 U.S.C. § 327. The project seeks to widen this section of Highway 101 to allow safer passage of
18 STAA heavies traveling in opposite directions at the same time through the tightest curves on this
19 road (2017 AR 95, 240, 1803, 1826, 1883). No environmental impact statement has ever been
20 done for the project, which is now in its third version. Scope-of-work modifications have been
21 made to address issues along the way.

22 * * *

23 NEPA requires an EIS for all “major Federal actions significantly affecting the quality of
24 the human environment.” 42 U.S.C. § 4332(C). Not every project necessitates an EIS. An

25
26 ¹ Currently allowed trucks have a length limit of 65 feet (75 feet for trucks with two trailers). STAA
27 heavies have no length limit. Nevertheless, STAA heavies are not permitted infinitely long trailers. As stated,
28 STAA heavies have a trailer length restriction of either 48 feet or 53 feet. By contrast, the currently allowed
trucks do not have any restricted trailer lengths (2017 AR 6041). Because the STAA heavies are longer trucks
than the currently permitted eighteen wheelers, the difference in length seems to turn, at least in part, on the size
of the tractor unit. That is, the front portion of the truck which pulls the trailer.

1 agency may prepare an environmental assessment to determine whether or not the environmental
2 impact is significant enough to warrant an EIS. 40 C.F.R. §§ 1501.3, 1508.9; *Metcalf v. Daley*,
3 214 F.3d 1135, 1142 (9th Cir. 2000). If the EA shows the project may significantly affect the
4 environment, an EIS must be prepared. Otherwise, the agency can declare a “finding of no
5 significant impact” and skip the EIS. 40 C.F.R. §§ 1501.3, 1501.4.

6 NEPA’s purpose is twofold: *first*, to require agencies “to consider every significant aspect
7 of the environmental impact of a proposed action,” and *second*, to “ensure[] that the agency will
8 inform the public that it has indeed considered environmental concerns in its decision making
9 process.” *Kern v. BLM*, 284 F.3d 1062, 1066 (9th Cir. 2002), (quoting *Baltimore Gas & Electric*
10 *Co. v. Natural Res. Def. Council*, 462 U.S. 87, 97 (1983)). A goal is thus to assure that “agencies
11 are fully aware of the impact of their decisions on the environment.” *Friends of the Earth v.*
12 *Hintz*, 800 F.2d 822, 836 (9th Cir. 1986), (citing *Friends of Endangered Species, Inc. v. Jantzen*,
13 760 F.2d 976, 985 (9th Cir. 1985)). Our court of appeals has termed the crucial evaluation of
14 whether or not a proposal yields significant impacts a “hard look.” *Kern*, 284 F.3d at 1066.
15 Insofar as NEPA is concerned, once the relevant agency completes the required hard look, it is
16 free to proceed even with an action that will have an adverse impact on the environment. NEPA
17 does not outlaw adverse impacts on our environment, but it does force agencies to impose such
18 adverse impacts with their eyes wide open.

19 * * *

20 In 2008, after issuing a draft Environmental Impact Report/EA — pursuant to NEPA and
21 Section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. § 303 — Caltrans
22 opened its draft EA to public comment and received nearly 800 letters and emails, both in support
23 of and in opposition to the project. Caltrans changed its proposal in response, approved a final
24 EA, and adopted a FONSI. The project would have included curve realignments, drainage
25 improvements, shoulder widening, cuts and fills, and a retaining wall. No old-growth redwoods
26 would have been removed (2017 AR 95, 1805, 1827, 1852, 1972, 1995). A controversy arose
27 nevertheless because excavation activities might have impacted old-growth redwoods in and out
28 of the park as a result of mechanical and cut and fill work in the old-growth redwoods’ “structural

1 root zones” and “root health zones.” *See Bair v. California State Dept. Of Transp.*, 867 F. Supp.
2 2d 1058, 1062–63 (N.D. Cal. 2012) (*Bair I*).²

3 In September 2010, some of the plaintiffs in this action filed suit. In July 2011, a
4 preliminary injunction halted all activity on the project while the parties litigated the merits. An
5 April 2012 order granted partial summary judgment against defendants. It concluded that
6 Caltrans’ assessment of the environmental impact of the project had been flawed in two respects,
7 both of which raised the question as to whether Caltrans had provided the “hard look” required by
8 NEPA. *First*, the old-growth redwood tree analysis had been based on inaccurate diameter
9 measurements. *Second*, the maps used by Caltrans had a number of discrepancies and important
10 omissions. When the accuracy of the maps was challenged, Magistrate Judge Nandor Vadas
11 personally inspected and measured the scene to confirm the maps were in error. The resulting
12 order required Caltrans to correct the inaccuracies and to reassess the impacts of the project in
13 light of the corrected facts, or alternatively, to conduct an EIS. *Id.* at 1063–67. The order
14 suggested Caltrans “give serious consideration to the other significant arguments made by
15 plaintiffs in their motion” and also “to prepare accurate maps signed by a qualified engineer,
16 number each old-growth redwood and identify it in the map, identify its root zone, and set forth
17 the environmental issues to each one.” *Id.* at 1067.

18 Caltrans did not appeal the order. Instead, Caltrans developed a “Supplement to the Final
19 Environmental Assessment.” This supplement was based on a tree report authored by Arborist
20 Dennis Yniguez. In September 2013, Caltrans placed a notice in a newspaper and invited public
21 comment. The 2013 Supplement received over 9000 public comments in response. After taking
22 all the comments into account, the 2013 Supplement reported several changes to the project from
23 *Bair I*, including the addition of barrier transitions and crash cushions and increasing the number
24 of old-growth redwood trees that could have their root health zones affected by the project (2017

25
26 ² “Structural root zone is a circular area with the tree trunk at the center and a radius equal to three
27 times the diameter of the tree trunk measured at breast height (4.5 feet above ground level). Most of the tree’s
28 structural roots are located within this area” (2017 AR 1805 n.1, *citing to* Department of Parks and Recreation,
2005). “The root health zone is a circular area with the tree trunk at the center and a radius equal to five times
the tree trunk diameter measured 4.5 feet above ground level” (2017 AR 4315, *citing to* Smiley et al. 2002)).
An even farther measurement of the tree’s root zone is the “drip line.” That is, “[t]he area of the ground directly
beneath the vertical projection (shadow) of the trees foliage canopy” (2017 AR 989).

1 AR 96, 184–85, 287–88, 294, 297, 966–67, 301–02, 4421). In January 2014, a reevaluation of the
2 2010 FONSI was approved pursuant to the 2010 EA and 2013 Supplement (2017 AR 457–60).
3 Unsatisfied with the changes to the project, some of the same plaintiffs from *Bair I* filed a second
4 action in 2014 (*See Bair v. California State Dept. Of Transp.*, No. 3:14-cv-03422-WHA) (*Bair*
5 *II*).

6 Before the second action went very far, however, Caltrans reversed course and published a
7 “Notice of Rescission of Finding of No Significant Impact.” This resulted from a writ of mandate
8 (in a parallel California Environmental Quality Act litigation) by the Humboldt County Superior
9 Court which directed Caltrans to set aside approval of the project to perform additional
10 environmental analysis. See *Lotus v. Dep’t of Transp.*, 223 Cal. App. 4th 645 (2014).
11 Specifically, the rescission provided that “[a] new NEPA finding and any other necessary Federal
12 environmental determinations will be issued consistent with this additional analysis” (2017 AR
13 467). The parties dismissed *Bair II* by stipulation (*Bair v. California State Dept. Of Transp.*, No.
14 3:14-cv-03422-WHA, Dkt. No. 36).

15 Arborist Dennis Yniguez conducted yet another old-growth tree report in 2015,
16 performing additional environmental analysis (2017 AR 4301–4511). In May 2017, Caltrans
17 approved a 2017 Environmental Assessment together with a new FONSI, which is the document
18 now under challenge. The 2017 EA and 2017 FONSI are the same document. The 2017
19 EA/FONSI incorporated by reference the 2010 EA and 2013 Supplement and explicitly line-
20 edited specific changes to those documents as to each detail of the 2017 iteration of the project
21 that differed from the previous versions of the proposal (2017 AR 92, 94).

22 The 2017 EA/FONSI increased the number of old-growth redwood trees that would be
23 subject to work within the structural root zone of the trees (increased by four trees) and within the
24 root health zone (increased by three trees). In addition, the 2017 EA/FONSI reduced the area of
25 disturbed soil, reduced the volume of excavated material, reduced the estimated volume of fill,
26 and reduced the total number of non-old-growth trees to be removed (from 54 to 38) (2017 AR
27 97–98). These modifications resulted both from both changes in the scope of work as well as
28 better analysis. Again, no old-growth redwoods would be removed under the revised project

1 (2017 AR 114). No new round of public comment was invited. Notice of the 2017 EA/FONSI,
2 however, was sent to the State Clearinghouse, posted on Facebook, published in the Federal
3 Register, and a postcard was purportedly mailed to interested parties (2017 AR 186–192).

4 In November 2017, this action was filed challenging the 2017 EA/FONSI. The complaint
5 alleged that Caltrans violated NEPA, the Department of Transportation Act, and the Wild and
6 Scenic Rivers Act (*Bair v. California Dep’t of Transp.*, 3:17-cv-06419-WHA, Dkt. No. 1).

7 Plaintiffs here, as in *Bair I* and *Bair II*, are individual supporters and non-profit environmental
8 groups who claim the project will jeopardize the health of the old-growth redwoods.

9 The administrative record has remained a work in progress. The 2017 administrative
10 record, lodged in February 2018 (Dkt. No. 31), included slightly less than seven thousand pages.
11 A supplemental 2017 administrative record, lodged in June 2018, added hundreds of more pages
12 plus a video of Highway 101 winding through Richardson Grove State Park (Dkt. No. 47). The
13 2010 administrative record, re-lodged in September 2018 (Dkt. No. 59), contained over ten
14 thousand pages.

15 Mastering the administrative record has been awful. The 2017 EA/FONSI incorporated
16 by reference the 2010 EA and the 2013 Supplement. These documents, along with the 2017
17 EA/FONSI became a “Revised EA” (2017 AR 92, 94). Other documents also incorporated by
18 reference included Caltrans’ expert report (the “2015 Tree Report”). With each presented
19 document, however, the project substantively had changed. These layers upon layers of changes
20 made it challenging to keep track of what information had been revised, edited, and struck with
21 each passing phase of the project. When analyzing the full scope of the different components of
22 the 2017 EA/FONSI, it is nearly impossible to tell whether the information gleaned is still
23 operative or has been either explicitly or implicitly struck.

24 For example, the 2017 EA/FONSI stated “[e]xcept for the minor changes and additional
25 studies as noted in this document, all other information in the [2010] EA and the [2013]
26 Supplement remains accurate” (2017 AR 239). Yet, Caltrans neglected to strike “Table 10” from
27 the 2017 EA/FONSI. Located in Chapter 2 of the 2010 EA, Table 10 charted the precise amount
28 of cut and fill (measured by the inch) in the root zones of 68 old-growth redwoods. That is, a

1 little less than two-thirds of the old-growth trees impacted by the current project (see 2010 AR
2 130–31). The calculations in Table 10 were based on the measurements of the trees at the time of
3 the 2010 project and had been referenced at length in the 2013 Supplement. After a great amount
4 of puzzlement in trying to understand how the data from Table 10 applied to this project, its
5 inclusion simply turned out to be an error in drafting — a “scrivener’s error,” as Caltrans
6 eventually dubbed it.³

7 Also needlessly overlooked by Caltrans was that the required Section 4(f) concurrence
8 from State Parks had not been updated *since 2009* (on an older version of the project). Caltrans
9 attempted a slap-dash fix of supplementing the concurrence by declaration.

10 Furthermore, some studies cited by the 2015 Tree Report could not be located in the
11 record and had to be tracked down independently. Other studies, included in the record, were of
12 such a poor copy that entire pages could not be read at all (*see, e.g.*, 2017 AR 1179). Even
13 attempting to assess the various tree reports on their own — a task that should have been made
14 easy — resembled decoding hieroglyphics. The 2015 Tree Report’s pictures illustrated the scope
15 of the project as applied to each tree in a diagram of overlapping concentric circles. Three circles
16 in each picture denoted the tree trunk orbited by the tree’s structural root zone followed by its root
17 health zone. Also illustrated was where the current highway as well as the proposed highway
18 intersected with these root zones. Shaded areas within the diagram further symbolized new soil
19 and excavation (2017 AR 4389–4510). Yet, these drawings turned out to rarely be
20 straightforward. Often, unaccounted differences in the color scheme led to countless hours spent
21 trying to match the individual pictures of the trees from the tree report to the provided legend.
22 Much of these painful exercises led to frustration, but little by way of substantive progress. All
23 this, as if parsing through the 2017 EA/FONSI and the approximate 18,000 pages in the record
24 had not been complex enough.

25
26 ³ At the November hearing, Caltrans also suggested that Table 10 was superseded by language in the
27 2013 Supplement. The 2013 Supplement provided as follows: “This Supplement to the Final EA revises a
28 portion of Chapter 2 of the original document . . . *analyzing* potential tree impacts based on revised tree data and
new proposed barrier rail modifications” (2017 AR 287) (emphasis added). The supplement purported to revise
analysis. Table 10 is not analysis, but a chart of underlying data — namely, tree numbers, tree location, and cut
and fill depth. This statement from the 2013 Supplement therefore could not have allowed for the specific cut
and fill data in Table 10 to be superseded.

1 For their part, plaintiffs’ counsel and their expert have larded the litigation record with
2 sworn statements that have proved unreliable (*see, e.g.*, Dkt. No. 60-1 at ¶ 118). Some of these
3 examples will be laid bare below.

4 Turning to the procedural posture of this action, in September and October 2018, the
5 parties filed the instant cross-motions for summary judgment (Dkt. Nos. 60, 63). A hearing was
6 held on November 28, 2018. Further supplemental briefing, including briefing from the
7 superintendent of State Parks, was requested before and after the hearing (Dkt. Nos. 73, 78, 79,
8 84). Those supplemental briefs were timely filed (Dkt. Nos. 76, 77, 82, 83, 85).

9 * * *

10 After all the dust had settled, it became unclear whether the new measurements conducted
11 by Caltrans in the 2015 Tree Report were reliable. Plaintiffs’ expert, Dr. Joe McBride, flagged 12
12 tree measurements as particularly questionable in light of their supposed inconsistency with his
13 own prior measurements (Dkt. No. 86). Dr. McBride filed a declaration that he had personally
14 measured each of the 12 in 2011, attaching his (heavily redacted) 2011 field notes to verify his
15 measurements (Dkt. No. 87).

16 On April 8, 2019, by court order, the parties, including Dr. McBride, jointly re-measured
17 the 12 trees. The results vindicated the measurements in the 2015 Tree Report. Caltrans was
18 right and Dr. McBride was wrong.⁴

19 This led to the questioning of yet more of Dr. McBride’s measurements, as will be
20 explained below. In short, both sides bear responsibilities for the confusion and inaccuracies
21 larded into this record. This order now follows.

22 **ANALYSIS**

23 This order identifies four significant issues given short-shrift or no shrift by the 2017
24 EA/FONSI. The first one comes right out of the primary science relied upon by Caltrans.

25 _____

26 ⁴ The parties disagreed on how to measure one of the 12 trees. The difference in measuring process
27 affected the measurement result. Caltrans’ result matched the 2015 Tree Report. Plaintiffs’ result matched Dr.
28 McBride’s 2011 measurement. But the tree is so hard to measure meaningfully due to a bottleneck bulge that
the discrepancies don’t matter. Also, the manner in which Caltrans’ measured this tree (Tree 9) was consistent
both with the recommendation of the United States Forest Service and with how the record provided Caltrans
would measure such “bottleneck” trees (2017 AR 4018).

1 **1. PAVEMENT OVER HALF OR MORE OF THE ROOT ZONE.**

2 All of these old-growth redwoods have lived many times longer than our nation has
3 existed. While none of these ancients will be cut down outright under this proposal, the question
4 remains whether the agency has adequately ruled out any significant risks to the lives of these
5 giants due to work proposed in and about their root zones. As the 2015 Tree Report stated, “[t]he
6 issue is not just whether roots would be disturbed to some extent, but whether old-growth
7 redwoods can successfully adapt, compensate, and remain in vigorous health despite disturbance
8 to roots” (2017 AR 4315).

9 The new centerpiece of Caltrans’ analysis has been the theory that redwoods can sustain
10 damage to their root system and still thrive due to a robust tendency to regenerate new roots.
11 Over and again, redwood “resiliency” became the answer to virtually every question considered
12 by Caltrans. Two studies provided the primary pillars of support. One of these studies, authored
13 by Professor Edward Sturgeon, indeed supported the incredible resiliency of redwoods.

14 This same study, however, also raised a danger that went insufficiently analyzed by
15 Caltrans, namely whether the additional pavement over the root zones of certain trees will
16 suffocate them.

17 Professor Sturgeon’s study, entitled “The Effects of Use, Impact and Other Factors of
18 Coast Redwood,” had been prepared in 1964 for the National Park Service. Its purpose was “to
19 relate the effects of roads, trails, campgrounds, and human use on redwood trees and stands in
20 Northwestern California.” The study further stated that “[t]he importance of these factors in their
21 impact upon redwood trees and stands is evaluated in light of the need to preserve these trees for
22 the cultural use and enjoyment by people for all time” (2017 AR 1146). The 2015 Tree Report
23 quoted from Professor Sturgeon that “[t]he coast redwood species (*Sequoia sempervirens*) is
24 rather remarkable in its ability to adapt to soil conditions, to sprout profusely, to respond to
25 increased light, and to survive and grow under certain stresses imposed by man” (2017 AR 4308).
26 According to Professor Sturgeon, even “[t]he loss of a third of the root system through road
27 building activities seldom causes visible loss of growth and vigor either in the bole or crown”
28 (2017 AR 1152–53) (citation omitted).

1 One important limitation specified by Professor Sturgeon, however, concerned the roots'
2 need for oxygen. According to Professor Sturgeon, feeder roots grow in the root health zone "in
3 the upper two feet of soil." The roots provide the trees with water, nutrients, *and oxygen*. Paving,
4 however, covers the soil, which can lead to the tree suffocating. Per Professor Sturgeon:

5 [P]aving does prevent aeration of the root zone. Roots of
6 most tree species are not fully developed under paving
7 because of lack of oxygen. Roots need a continuing supply
8 of oxygen to remain healthy. If they do not get enough in a
9 soil covered by paving, they become susceptible to root
10 fungus attack. But, judging from the absence of significant
11 loss of vigor in trees bordering the highways, coast
12 redwood is evidently not seriously affected by paving
13 *where it does not cover more than half the trees' root zone*.
14 Wagener (1914) indicates, however, that where the entire
15 root zone of the tree or trees is covered by paving, as in a
16 commercial development or in a parking lot, the trees so
17 effected will eventually die.

18 (2017 AR 1163) (emphasis added). Professor Sturgeon seems clearly to say that paving over
19 more than half the root zones will affect the health of the tree and paving over all of it will kill it.

20 More recent studies reinforce the import of the relationship between paving and oxygen.
21 A study entitled "Root Systems of Trees-Facts and Fallacies," stated that "[c]onstruction such as
22 asphalt paving can reduce soil oxygen levels from 18% to as low as 3% in some instances" and
23 "[r]educed soil aeration is one of the most common types of construction damage to trees"
24 (Schnelle et al 1989) (2017 AR 1484). A different study, entitled "Back to Basics: Tree Roots,"
25 noted that "[p]avement reduces oxygen levels . . ." and that "[r]oot growth and function is
26 dependent on the amount of oxygen in the soil. Oxygen is required for normal root respiration.
27 Respiration is an oxidative process, which releases energy from stored carbohydrate. This
28 provides the energy for root growth and function (water and mineral uptake, growth regulation
and synthesis of important compounds) . . . Anything that restricts oxygen exchange is a potential
problem" (Hagen 2001) (2017 AR 1684, 1687) (emphasis in original). These studies show the
scientific import of oxygen to the health of trees, particularly as impacted by pavement.

Notwithstanding these studies (or that the excerpt from Professor Sturgeon's study had
been quoted by Caltrans in the 2017 EA/FONSI and other reports (*see, e.g.*, 2017 AR 65, 209,
4088, 4309)), no relevant document expressly considered whether the old-growth roots will

1 receive *enough* oxygen under the proposed enlargement of pavement. None even mentioned the
2 word “oxygen” except in reference to Cement-Treated Permeable Base. This form of cement
3 “decreases the roadway thickness by 25%, reducing the amount of excavation and compaction
4 that would normally be required” (2017 AR 974). The 2015 Tree Report stated that it will “allow
5 for greater oxygen diffusion and water percolation than a conventional subbase material” (2017
6 AR 4319), (citing the 2010 EA at 114, 115, 189). The 2010 EA provided the same level of
7 generality. According to the 2010 EA, Cement-Treated Permeable Base will “minimize the
8 thickness of the structural section, *provide greater porosity*, minimize compaction of roots, and
9 minimize thermal exposure to roots from Hot Mix Asphalt paving” (2010 AR 133; 2017 AR
10 1926, 2002) (emphasis added). Similarly, the 2010 EA provided that “[i]n areas where new
11 embankment is to be constructed” measures to “promote air circulation shall be used” such as
12 using permeable material as to the first lift of fill (2017 AR 1927). (It remains unclear whether
13 this material is the same as the Cement-Treated Permeable Base.)

14 This “analysis” was short-shrift. Even accepting as true that a special cement may allow
15 for some greater oxygen diffusion to the roots than ordinary cement, the issue remains. Utilizing
16 this “thinner” *form of cement* does not mean that roots will have sufficient access to oxygen. For
17 all the record shows, the amount of oxygen that will get through the concrete will be too little to
18 do enough good. Token generalities that the cement will “allow for greater oxygen diffusion” or
19 “provide greater porosity” or “promote air circulation” beg the question whether enough oxygen
20 will seep through.

21 At least three old-growth redwoods seem at risk — specifically, Trees 104, 105, and 106.
22 For them, the *total* area of asphalt covering the root zone appears to tip over the 50% threshold.
23 The assessment from the 2015 Tree Report for each of these three trees is appended hereto (along
24 with the map legend).

25 As can be seen from the appended maps, Tree 104 in the 2015 Tree Report will have
26 three-quarters of both its structural root zone and root health zone covered by pavement (2017 AR
27 4495). More than half of Tree 105 and Tree 106’s root zones will also be covered in pavement
28 (2017 AR 4496, 4497). With Tree 105, for example, other than a blunted triangle-shaped area of

1 earth immediately surrounding the tree, it will be nearly surrounded by pavement with more than
2 half of its root health zone covered by pavement.

3 This problem is exacerbated for Tree 104 and Tree 106 because their unpaved root zones
4 host two *other* old-growth trees. Specifically, Trees 102 and 103 rest within the unpaved root
5 zone of Tree 104. Within the unpaved root zone of Tree 106 appears to be Tree 117 and another
6 unidentified old-growth redwood. The old-growths within the root zones to Trees 104 and 106
7 will compete for oxygen. As Professor Edward Stone provided in a 1990 study, “[t]he density of
8 absorbing roots . . . strongly affects initial rates of water and nutrient uptake *and likewise*
9 *competition among plants with roots in the same soil volume*” (Stone and Kalisz 1990) (2017 AR
10 1591) (emphasis added) (citation omitted).

11 Here, this order pauses to note that the 2015 Tree Report did account for compaction of
12 the soil (such as, when visitors repeatedly walk on the earth). Compaction presents a similar
13 issue to paving insofar as it also restricts the roots’ ability to take in oxygen. Still, compaction *of*
14 the soil and pavement *covering* the soil are not the same. In addition, the 2015 Tree Report did
15 not assess the issue of compaction as a whole. Instead, the 2015 Tree Report provided that “[t]he
16 *minor increase* in compacted area created by these limited highway modifications would not”
17 stress the resilience of the trees. In the same vein, the 2015 Tree Report concluded as to
18 compaction, that “[t]he small amount of *additional* compaction resulting from implementation of
19 this project would be insignificant to the health and stability of the old-growth redwoods” (2017
20 AR 4319) (citations omitted) (emphasis added). The issue here, however, is not just the *minor*
21 *increase* in asphalt and pavement, but the paving *in the aggregate*. Will the project tip the total
22 area of pavement from just short of the “danger zone” (less than 50% of the root zone) to just
23 within the “danger zone” (greater than 50% of the root zone)?

24 During the notice-and-comment period, one comment pointed out the lack of analysis as
25 to issues pertaining to paving percentage on the root zones. Caltrans responded by merely
26 stating:

27 The trees that would potentially be affected by the project
28 have clearly acclimated to the existing impervious surface
over the last ninety or so years since the road was first
constructed, and are thriving today. . . . redwoods have

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widespread and complex root systems that extend far beyond the impervious surfaces; larger roots can function even when compacted; the root system can proliferate in other areas to compensate for reduced moisture uptake; and they have other characteristics . . . that enhance their moisture-absorbing capacity.

(2017 AR 4495). This answer was insufficient to address the issue here. Accepting as true that the trees have enjoyed health so far despite some pavement and accepting as true that the amount of new pavement seems small, this still begs the question of whether pushing the needle further into the red zone will be a push too far. Nowhere did Caltrans mention the trees’ aeration or oxygen when pavement covers over half the root zone.

Caltrans did recognize the general issue of roots having access to oxygen by adopting a “brow log” minimization measure which “will allow oxygen and air movement around the base of the tree” (2017 AR 974). The record is not clear, however, whether brow logs remain part of this project. The 2015 Tree Report, which the 2017 EA/FONSI explicitly stated “*replaces previous versions,*” (2017 AR 130) (emphasis in original), utilized five specific minimization measures to rate the impact of the proposal on every old-growth tree. Yet, brow logs were not mentioned once by the report. Subsequent reports, such as the 2017 Project Report and 2017 Environmental Impact Report do not mention brow logs either. In any event, even if brow logs remain part of the project, the scope of their proposed use never included trees where over half the root zone will be covered by pavement. The use of brow logs had only been proposed “[i]n locations where embankment four inches in depth or greater would be placed up to the trunk of old growth redwood trees” (2017 AR 303). How many trees satisfied this criteria? Just one (Tree 83) (2017 AR 302). As such, the record fails to address the use of brow logs as to these three trees’ survival.⁵

That in another study in the record (for which Caltrans’ resilience theory also relied), 90% of the roots in the study had been removed (without paving over the surface) does not address what will happen if too much pavement covers the root zone. True, clean removal of roots still

⁵ Per the 2013 Tree Report: “[b]row logs are approximately 12-inch diameter redwood poles, about 10 feet in length, that would be stacked against the base of a single redwood (Tree No. 83) parallel to the existing roadway, so that the roadway shoulder could be extended without requiring tree removal” (2017 AR 4095).

1 allow new roots to grow and absorb oxygen from the surface. Pavement over more than half the
2 root zone, however, seals out the oxygen. And while another study noted that some sequoia trees
3 had grown nearly 50% faster after 75% of its root system had been covered with pavement, the
4 study itself limited these results stating that “[t]he effects have been measured over a small
5 percentage of the tree’s total life, and these changes may eventually prove harmful” (Hartesveldt
6 et al 1975) (2017 AR 1377).

7 In sum, Caltrans arbitrarily and capriciously invoked the resilience aspect of the scientific
8 studies while ignoring a circumstance which speaks directly to redwoods’ fallibility. To satisfy
9 their hard look requirement, Caltrans should have analyzed this fallibility, specifically, whether
10 this project will suffocate these old-growth trees. Caltrans did not so analyze, yet, concluded that
11 none of the old-growth trees would be significantly impacted by this project. Accordingly,
12 Caltrans did not fully inform itself of the appropriate facts. This conclusion has no “rational
13 connection between the facts found and the conclusions made” as to the impacts on the old-
14 growth redwoods. *Or. Nat. Res. Council v. Lowe*, 109 F.3d 521, 526 (9th Cir. 1997). The
15 required “hard look” has not been satisfied.

16 **2. CONSTRUCTION IN THE STRUCTURAL ROOT ZONE.**

17 The State Parks Handbook provided: “[t]here should be no construction activities in the
18 Structural Root Zone of a protected tree. This includes soil disturbance from 0 to 3 foot depth . . .
19 . Any intrusion into this zone is usually accompanied by significant injury to roots further from
20 the trunk; this will shorten the useful life of the tree in the developed area by reducing vigor and
21 introducing root disease” (2017 AR 991). Caltrans’ proposal, however, will involve construction
22 in the structural root zone of dozens of protected, old-growth redwood trees.

23 Caltrans never meaningfully addresses the issues raised by the Handbook. In response to
24 a comment challenging why Caltrans did not rely on State Park’s guidelines in the State Parks
25 Handbook when “Richardson Grove’s redwoods are State Parks resources,” (2017 AR 968),
26 Caltrans answered:

27 The evaluation for the [2013] Supplement was based upon
28 studies by certified arborists who visited Richardson Grove
and inspected each potentially impacted tree, and applied
their experience and training, literature on the coast

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redwood, and all appropriate guidelines to their analysis of potential effects on the trees. State Parks was consulted throughout the development of the Final EA, and their Handbook was used to identify and delineate the Structural Root Zone (SRZ) as the area of the root zone of particular concern. State Parks’ input was used to select the diameter of 30 inches as a threshold by which to identify redwoods as “old growth,” and to choose the threshold of two inches in diameter for roots to protect from cutting in the SRZ State Parks has concurred that the project includes all possible planning to minimize long term harm to the park resources.

(2017 AR 968–969). Caltrans thus never explained *why* it ignored the Handbook’s cautions or *how* it would confront the issues raised by the Handbook. Instead, it danced around the problem. Further, minimizing long-term harm does not translate to eliminating long-term harm. In fact, “minimizing” begs the question of how minimum the long-term harm will be.

In *WildEarth Guardians v. Provencio*, our court of appeals recently held that “a conclusion, even a correct one, that a given action might reduce a potential impact does not alone indicate that the impact would not be significant.” *WildEarth Guardians v. Provencio*, 918 F.3d 620, 635 (9th Cir. 2019). In other words, an agency “cannot rely solely on the reduction of adverse impacts to demonstrate that those impacts are not significant.” *Id.* at 636. Still, conflating “minimization” with “significance” may not mean the agency violated NEPA. Impacts may be both minimized and not significant.

The impact alleged by the Handbook, however, would be one that is significant. Whether root disease can occur when there is construction in the structural root zone of the old-growth trees or whether the tree can survive such root disease is an important consideration. Although Caltrans points to studies that show old-growth resilience when much of the roots had been removed, disease, unlike amputating roots entirely, is a problem that spreads. Further, as these are impacts in the *structural* root zone, diseased roots may have a crippling effect on the balance of the trees. That an old-growth redwood can remarkably survive without 90% of its roots or that it is generally resistant to decay, therefore, has no bearing on whether the scope of work of this project, without minimization measures, will afflict the old-growth trees with root disease.

The point here is not that Caltrans is required to comply with the State Parks Handbook. Of course, Caltrans is a separate agency and is not bound by the Handbook. See *Western Radio*

1 *Services Co., Inc. v. Espy*, 79 F.3d 896, 901–02 (9th Cir. 1996). The point here, however, is that
2 Caltrans never provided *any* explanation as to why these guidelines are being ignored. Returning
3 to our court of appeals decision in *Western Radio Services*, the panel there did not hold that a
4 handbook can never be considered. To the contrary, our court of appeals in *Western Radio*
5 *Services* “explicitly acknowledged the [Handbook]’s role in establishing ‘guidelines for the
6 exercise of the [agency]’s prosecutorial discretion.’ ” *Everett v. U.S.*, 158 F.3d 1364, 1369 (D.C.
7 Cir. 1998), (quoting *Western Radio Services., Inc.*, 79 F.3d at 901). The information in the
8 Handbook should have been considered, assessed, or explained. Caltrans did not satisfy its
9 required hard look in determining the scope of impacts due to construction in the structural root
10 zone of the old-growth trees would not significantly impact the trees.

11 **3. PUBLIC ENJOYMENT OF THE PARK.**

12 If we were today considering building a major highway through a grove of ancient
13 redwoods, almost certainly the public would demand that the grove be spared and that the
14 highway bypass the park. The roadway in question here was built through the grove at a time
15 when roadways and vehicles had simpler uses and purposes, including touring.

16 Established in 1922, Richardson Grove State Park today comprises around 2000 acres and
17 includes a redwood forest, the Eel River, oak woodlands, and grassy meadows. Per the 2010 EA,
18 amenities include:

19 [N]ine miles of hiking trails, a picnic area, year round
20 camping, river access for swimming and fishing, and a
21 variety of interpretive/educational programs offered during
22 the summer in association with the campground and Visitor
23 Center, such as evening campfire programs and guided
24 nature hikes. The park has 170 family campsites in three
25 campgrounds as well as a group campground and sites for
26 cyclists/hikers. The river is a popular spot for swimming
27 and relaxing in the summer and for salmon and steelhead
28 fishing in the winter.

(2017 AR 1851). How unpleasant, shouldn’t we ask, will these experiences become, when STAA
heavies rumble through the park — in addition to existing traffic?

When a highway is constructed, the Federal-Aid Highway Act requires the Secretary of
Transportation to “develop and promulgate standards for highway noise levels compatible with
different land uses.” 23 U.S.C. § 109(i). This requirement is implemented by federal regulations

1 establishing a three-stage noise analysis process that the FHWA must follow for new highway
2 projects. *See* 23 C.F.R. § 772; *see also* *Prairie Band Pottawatomie Nation v. Federal Highway*
3 *Admin.*, 684 F.3d 1002, 1008 (10th Cir. 2012). Here, Caltrans assumed this responsibility on
4 behalf of the FHWA.

5 In brief, the three-stage analysis is as follows. *First*, the agency must determine whether a
6 proposed project will result in “traffic noise impacts.” § 772.11(a). *Second*, if the agency
7 determines that a project will create traffic noise impacts, “noise abatement shall be considered
8 and evaluated for feasibility and reasonableness.” § 772.13(a). *Third*, the agency may not
9 “approve project plans and specifications unless feasible and reasonable noise abatement
10 measures are incorporated into the plans and specifications.” § 772.13(h). Caltrans concluded
11 this project will not result in noise impacts and terminated its noise analysis at the first stage,
12 treating this conclusion as dispositive of all noise issues, including under NEPA.⁶

13 NEPA, however, requires its own public enjoyment analysis aside from Section 772.
14 NEPA is a procedural statute. As a procedural statute, NEPA does not mandate a particular
15 substantive result, but that the agency take the required “hard look.” One of the environmental
16 consequences to be looked at is public enjoyment. An agency cannot shirk its procedural hard
17 look responsibility entirely merely because under other legislation, such as the Federal-Aid
18 Highway Act of 1970, a particular result is tolerated (especially when that result specifically
19 permits the agency to not conduct any analysis). In other words, just because the agency satisfied
20 noise analysis under the Federal-Aid Highway Act does not mean the agency satisfied noise
21 analysis under NEPA.

22 Even under Section 772, there remains a defect. Under Section 772, “[t]raffic noise
23 impacts” are defined, in part, as noise levels that create *a substantial noise increase* over existing
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25 ⁶ An important note must here be made. Neither our court of appeals, nor any district court in our
26 circuit has ever had occasion to apply 23 C.F.R. § 772. As stated, however, these regulations were not
27 promulgated under NEPA. Section 772 provides “Procedures for Abatement of Highway Traffic Noise and
28 Construction Noise.” The purpose of the regulations is “[t]o provide procedures for noise studies and noise
abatement measures to help protect the public’s health, welfare and livability, to supply noise abatement criteria,
and to establish requirements for information to be given to local officials for use in the planning and design of
highways approved *pursuant to title 23 U.S.C.*” (emphasis added). Title 23 U.S.C. refers to the Federal-Aid
Highway Act of 1970.

1 noise levels (*see* § 772.5). To determine whether traffic noise impacts will occur, the agency
2 must determine the existing noise level, predict future noise levels for each alternative under
3 consideration, and compare the existing and predicted noise levels (*see* § 772.11).

4 Yet, as to long-term noise impacts, the 2010 EA merely provided that “[t]raffic noise
5 levels are not expected to increase appreciably due to the project *as the travel lanes are not*
6 *moving substantially closer to any sensitive receptors*” (emphasis added). But the whole point of
7 this project is to allow STAA heavies now going the long way to Eureka (through Oregon) to go
8 the short way to Eureka (through Richardson Grove). This diversion of traffic necessarily means
9 more cargo will pass through the grove, specifically, the existing cargo plus the cargo now carried
10 by the STAA heavies. This necessarily means, in turn, that more trucks will pass through as well,
11 specifically, the existing trucks already going through the grove plus the STAA heavies now
12 going the roundabout way. This extra traffic would generate, it would further seem, extra noise
13 and degrade the park experience.

14 Caltrans got around this seemingly airtight logic with the *ipse dixit* that the number of
15 trucks through the grove would not change — therefore, the noise would not get worse. Caltrans
16 expects that the “older” trucks now passing through the grove would be replaced by “newer”
17 STAA heavies. Since the STAA heavies have more cargo room, fewer would be needed, Caltrans
18 figures. This would, Caltrans surmises, keep the total number of trucks through the grove the
19 same — even after rerouting the STAA heavies now going the long way through the grove (2017
20 AR 125).

21 Caltrans gave no specific data to prove any of this. But to illustrate Caltrans’ math,
22 assume for the sake of example only that for every 100 non-STAA heavy trucks going the short
23 way through the grove, there are now twenty STAA heavies going the long way. Caltrans’ math
24 would necessarily dictate that all of the existing cargo flowing through the grove in those 100
25 non-STAA trucks could be consolidated into 80 STAA heavies, so that the total (80 + 20) going
26 through the grove would not increase.

27 To take a different illustration, if there were 40 STAA heavies going the long way for
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1 every 100 non-STAA heavy trucks now going the shorter way over Highway 101, then Caltrans
2 thinks all of the existing Highway 101 cargo could fit in 60 STAA trucks.

3 The first flaw in their assumption is that once the project is finished, all of the existing
4 through-grove trucks will be replaced by newer STAA heavies. This is premised on the idea that
5 all owners of the less modern trucks will immediately upgrade to the more modern trucks as soon
6 as allowed through the grove. Some inefficiency must be expected during a transition period.
7 And so, some owners may not switch over right away. Further, different sizes of trucks serve
8 different needs and owners may prefer the trucks they already have. If Caltrans' logic were
9 correct, then every truck on, say, Highway 99 would now be a STAA heavy. But a few minutes
10 on Highway 99 reveals that many less modern semis populate that highway. Why would
11 Highway 101 be any different?

12 The second flaw is that the Caltrans logic presupposes that all of the old cargo through the
13 grove could physically consolidate into fewer trucks provided STAA heavies were substituted.
14 As the above examples show, however, the greater the ratio of new cargo to old cargo, the harder
15 it would be to consolidate the old cargo into fewer STAA heavies so as to keep the total trucks the
16 same. Since no data were studied on the old versus new, it is impossible to conclude that this
17 math will work and that there will be no appreciable increase in traffic.

18 In lieu of proper analyses, the 2010 EA conclusorily provided that "the project would not
19 expose people to any permanent substantial noise increase or excessive ground borne vibration"
20 (2010 AR 54-55). In addition, the 2010 EA stated "[t]he proposed project is not expected to
21 result in substantial change to the volume of truck traffic on US Route 101," (2010 AR 68), and
22 that "the net gain or loss in truck trips would be insignificant as a result of the proposed project"
23 (2010 AR 122). The 2017 EA/FONSI never revised these conclusions. These conclusions were
24 anchored in the sole report in the record that studied traffic on Highway 101 through Richardson
25 Grove State Park, Dr. David Gallo's 2008 study, which concluded that "removing the STAA
26 truck restriction on Highway 101 at Richardson Grove will have no impact on truck traffic in
27 Humboldt and Del Norte Counties" (2010 AR 6166).

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1 A closer look at this study reveals the short-shrift given to the truck traffic analysis. The
2 general focus of Dr. Gallo’s study had been to evaluate various economic impacts of this project.
3 One stated purpose of the study was to determine “[t]he impact of the STAA truck restriction on
4 truck traffic and exhaust emissions” (2010 AR 6164). Yet, this analysis comprised *a mere two*
5 *paragraphs*. It also contained three critical flaws.

6 *First*, the study had been based on data received from an online survey of 45 local
7 businesses. Of these 45, only *fourteen* answered the truck traffic questions. (In turn, all survey
8 responses were deemed confidential and were not provided in the record.) The study recognized
9 the limited implications which could be drawn from such a self-selected group, and stated:
10 “[c]learly the survey responses were not random since the majority of those responding had
11 substantial annual truck transportation costs. For that reason the results cannot be applied across
12 all area businesses” (2010 AR 6174).

13 *Second*, the effects on traffic had been gleaned solely from *the responses’ estimations*:
14 “[f]or those answering the question, they *estimated* a reduction in annual truck trips of 12.3%,
15 reducing annual truck traffic by 758 trips” (2010 AR 6174) (emphasis added). This flimsy data-
16 point was then never questioned, assessed, or revisited by the report itself or by the record.

17 *Third*, the rest of the study’s truck traffic analysis juggled conjecture and possibility with
18 zero substance. “[T]his [reduction of annual truck trips] *may be* offset since the reduced cost of
19 truck transportation is *likely* to result in increased export sales and other local economic activity,
20 thus increasing truck traffic. The *implication* is that removing the STAA truck restrictions on
21 Highway 101 at Richardson Grove will have little or no impact on truck traffic in Humboldt and
22 Del Norte Counties” (2010 AR 6174) (emphasis added). These flaws altogether render reliance
23 on this report facially unreasonable for truck traffic analysis.

24 Other traffic studies stated that “the existing park visitor experience is already affected
25 with the traffic noise from Highway 101 which bisects the park” (2010 AR 363). No further
26 analysis of how much worse the visitor experience will become due to the presence of the heavies
27 occurs. That State Parks concurred in the project insufficiently demonstrates that Caltrans took
28 any hard look at the incremental noise STAA heavies will bring to the park (2010 AR 219).

1 In its supplemental brief, Caltrans argues that “[t]here is no reason to believe that newer
2 STAA trucks will be any noisier than outdated CA-Legal trucks, and again, the project is not
3 expected to result in increased truck traffic” (Dkt. No. 77 at 14) (quotations and citations
4 omitted). Actually, there is reason. The STAA heavies’ *tractor units* (the front of the trucks
5 which pull the trailer) are bigger and heavier. The smaller trucks are smaller but that is no reason
6 to presume they are all “outdated” as if this somehow equates to these trucks being noisier than
7 the STAA heavies.

8 The noise STAA heavies will bring to Richardson Grove State Park, either on their own,
9 or through added traffic, should have been assessed. Caltrans study of the issue was inadequate.
10 Were this project to proceed without this crucial noise analysis, the future could bring about the
11 forever destruction of enjoyment of Richardson Grove State Park. While NEPA would not
12 outlaw this result if it came to pass, NEPA does force Caltrans to impose such an adverse impact
13 with eyes and ears wide open. Under the analysis undertaken, however, Caltrans is in no way
14 “fully aware of the impact of their decisions on the environment.” *Friends of the Earth v. Hintz*,
15 800 F.2d 822, 836 (9th Cir. 1986), (citing *Friends of Endangered Species, Inc. v. Jantzen*, 760
16 F.2d 976, 985 (9th Cir. 1985)). Caltrans did not satisfy its hard look.

17 **4. DAMAGE FROM STAA HEAVIES COLLIDING WITH REDWOODS.**

18 Another issue not considered by Caltrans is the potential increased damage to the old-
19 growth redwoods due to a direct strike by the larger and more powerful STAA heavies. Caltrans
20 maintains there is no greater risk to collisions with the trees. Yet, “[d]epending on truck
21 cab/trailer configuration, STAA [heavies] can be longer than the currently allowed California
22 Legal trucks” (the limits on width and weight would not change but the record is silent as to
23 height limits) (2017 AR 58). Specifically, STAA heavies have no limit to their overall length,
24 whereas the currently permitted trucks have 65 feet and 75 feet maximums (2017 AR 6041).
25 STAA heavies may therefore be more difficult to maneuver on the windy road even though it is
26 being expanded under the proposal.

27 Even assuming that there is no increased *risk* of a vehicle striking an old-growth tree
28 under the project, surely a vehicle strike would likely cause more *damage* to an old-growth tree

1 — if the vehicle is a STAA heavy. STAA heavies have larger *tractor units* than at least some of
2 the currently permitted trucks and can “carry greater volume loads than California legal trucks”
3 (2017 AR 16–17). This lends to the possibility that although the weight *limit* is the same, the
4 actual weight carried may differ. This, along with the heavier and larger *tractor unit*, would
5 create greater force at impact.

6 Moreover, the front of the STAA heavy double-trailer’s larger tractor unit shows a more
7 protruding engine compartment which differs greatly from some of the more flattened, currently
8 permitted, double-trailers’ tractor units. In the context of a collision, more protrusion focuses the
9 target leading to greater damage at impact. A taller, more flat, tractor unit will not damage a
10 surface as much as a more blunt tractor unit. This difference in protrusion should have been
11 sufficient to flag that were a STAA heavy to collide with a tree, the damage to the tree may be
12 greater than the currently permitted truck on account of the differences in the tractor unit. Yet,
13 the risk of more damage to an old-growth tree if the colliding vehicle is a STAA heavy had not
14 been considered by Caltrans. As such, this also undercuts that Caltrans satisfied its hard look as it
15 speaks directly to the impact on the old-growth trees abutting Highway 101.

16 **5. LEANING OLD-GROWTH REDWOODS.**

17 Here, this order discusses one issue for which the record sustains Caltrans, the issue of the
18 incremental risk of the toppling of leaning trees as a result of disturbing their structural root
19 zones.

20 To start, the 2015 Tree Report omitted any and all references to leaning trees. So too did
21 Caltrans’ consolidated notes from its 2015 walkthrough of the park (2017 AR 4007–14), and the
22 handwritten 2013 field notes provided in the record (which were often not legible) (2017 AR
23 4020–72). Likewise, at the time of the original notice-and-comment period, *no one*, including
24 plaintiffs’ expert Dr. McBride, raised the issue of tree lean.

25 In this latest round of litigation, nearly eight years after the first notice-and-comment
26 period, for the first time, Dr. McBride now raises the issue of leaning trees in his declaration:
27 “[s]even of the Identified Old Growth Trees, all of which abut Highway 101, lean at angles of 5
28 degrees or more (Table 7) . . .” (Dkt. No. 60-1 at ¶ 91). In Table 7 of his declaration, Dr.

1 McBride charts seven trees along Highway 101 with those trees’ diameter at breast height, degree
2 of lean, and percentage of impact to the structural root zone (adding the previous highway
3 construction to the proposed highway construction). Dr. McBride analyzes the data in Table 7 as
4 follows:

5 Table 7 reports the angle of lean that I recorded for each
6 tree and the impacts of previous and proposed highway
7 construction. The average area in the structural root zone
8 of these trees impacted by previous highway construction
9 amounted to 15.0%, indicating that these giant trees are
10 already structurally compromised. The average area in the
11 structural root zone of these trees that would be impacted
12 by the Project is 6.9%. Three of the trees would, as a result
13 of the Project, have total impacts to more than 30% of their
14 structural root zones (trees # 41, 49, 75, 81). Three of these
15 trees have diameters over 12 feet and another is over 8 feet.
16 Because of their size, they present the potential for serious
17 damage were they to fall. In the interest of safety, alone,
18 no additional highway construction should take place
19 within the structural root zone of these trees of these or
20 other leaning trees. . . .

21 (*id.* at ¶ 93). In a subsequent declaration, Dr. McBride provides additional explanation: “[t]he
22 leaning of trees does not impact their vigor. It does increase their potential for falling. Redwood
23 trees are massive and as they lean they put considerable strain on their structural roots. The
24 identification of leaning trees is one of the primary observations in identifying tree fall hazard.
25 For example, a Tree Risk Assessment by Tree Solutions identifies ‘a tree leaning toward a house’
26 as an ‘urgent Hazard’ ” (Dkt. No. 65-1 at ¶ 8) (citations omitted).

27 This Tree Risk Assessment by Tree Solutions is the only support Dr. McBride utilizes to
28 reinforce that tree leans endanger redwoods. The literature, however, does not pertain to
redwoods specifically but to “large growing trees of the Santa Cruz Mountains.” Worse, this
literature is not a scientific paper. The literature had been written to promote the author’s services
as an arborist. To that end, the piece explicitly concludes: “[i]f you have trees near your home it
is better to be safe than sorry. Have a *Tree Solutions* arborist inspect the trees, discuss findings
with you and make recommendations, or write a report with detailed observations and
specifications for management of risk. **The cost of prevention is usually much less than the
cost of loss and inconvenience of damage**” (emphasis in original).

1 In further studying the administrative record, however, the Court itself came across four
2 scientific articles which discussed tree lean. Two of the authors who discussed tree lean,
3 Professor Edward Stone and Professor Edward Sturgeon, had been relied on repeatedly by
4 Caltrans to support that redwood resilience is science, not myth (see also Professor D.R.
5 Helliwell, “Tree Roots and the Stability of Trees” (Helliwell 1989) (2017 AR 1488), and Dr.
6 Thomas Smiley (2017 AR 1710, 1731, 1742)). Like Dr. McBride, these two authors spoke about
7 the direct risk provided by tree lean in the context of work done in a redwood tree’s structural
8 root zone.

9 Specifically, Professor Stone stated the following about leaning trees in his 1965 lecture:

10 Death to the redwood comes mostly by windthrow, but a
11 few trees just lose their balance and fall over. They fall
12 over when there is not even a breath of wind. When we
13 consider the immense size of these trees, the importance of
14 balance is obvious. Their disproportionately small root
15 systems cannot possibly hold them up once they become
16 unbalanced. And balance in a tree such as this can only be
17 maintained as long as the tree is healthy and producing
18 copious amounts of cellulose. Only then can it correct for
19 the lean by laying cellulose down along the underside of
20 the lean which it does in response to gravitational forces . .
21 . .

22 (2017 AR 1196). Professor Sturgeon also amplified the importance of determining the balance
23 of the tree in the specific context of old-growth redwoods:

24 Many old-growth redwood trees have fallen at times when
25 there was little or no wind. This would indicate that these
26 unusually large and tremendously heavy old trees have
27 begun to lean and have ultimately lost equilibrium and
28 fallen, usually because of rot. Often this situation develops
after heavy rains of the winter, when the soil has been
saturated with water, and anchorage of the root system is
reduced because of weakened soil structure.

(2017 AR 1178). None of this authority has ever been referenced either by plaintiffs or Dr.
McBride. Nevertheless, this authority caused the Court to return to the McBride Declarations and
his tree lean measurements (which measured from 5–10 degrees). Given that the trees at issue
here are so tall with such a high center of mass would work in their individual structural root
zones weaken the trees’ anchor to the earth?

1 When Dr. McBride’s other tree measurements turned out to be substantively inaccurate, a
2 request issued for both sides to return to Richardson Grove State Park for the purpose of verifying
3 Dr. McBride’s original lean numbers and see how much the seven trees from Table 7 were
4 leaning, *i.e.*, to verify Dr. McBride’s lean numbers. Instead of doing this, however, Dr. McBride
5 made new measurements from spots Caltrans felt best showed the lean. In other words, no one
6 made any effort to duplicate Dr. McBride’s exact earlier numbers from the original locations.

7 The new numbers, measured by Caltrans, showed some small degree of leans. From
8 Caltrans’ select locations, Dr. McBride made his own measurements. His measurements partially
9 corresponded to his prior measurements and showed more lean than Caltrans showed. No
10 measurement by anyone, of any tree, at any point, yielded a degree of lean larger than 10 degrees.

11 The problem, however, continues to be that there is no evidence from any study in the
12 record, or even from Dr. McBride, providing what degree of lean should trigger concern. Dr.
13 McBride never says at what point a tree leaning is dangerous. The only study in the record that
14 provided any detail as to specific degrees of lean, was an article by Dr. Thomas Smiley who
15 added that “[l]eaning trees also may be more susceptible to wind throw. Stems that lean more
16 than 45 [degrees] from vertical are severe defects. Leaning stems with cracks or decay that
17 exceeds 70% of the stem diameter are critical risks” (2017 AR 1710). As stated, the highest
18 degree of lean measured had been 10 degrees. None of our lean angles come close to 45 degrees.
19 None of the McBride Declarations offer any guidance.⁷

20 To this criticism, plaintiffs would say that Caltrans ignored the issue. Plaintiffs would say
21 they need not prove the science behind the issue. Only that they need show the lack of a “hard
22 look.” This order disagrees. Before criticizing Caltrans for not making a “hard look” on an issue,
23 there must be sufficient evidence to indicate the issue should have been considered. For example,
24 the record does not address the issue of bark beetles, which have decimated millions of pine trees
25 in California. But there is no reason to believe bark beetles are relevant here. It would therefore
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27 ⁷ Dr. Smiley’s report stated that “root mounds” may be indicative of a weakened tree when a tree
28 leans. As such, when measuring lean angles, the parties also looked for root mounds. Plaintiffs argued that a
barely perceptible rise in the earth for one tree may have been a root mound. This is insufficient. In any event,
Dr. McBride never even mentioned root mounds before it had been flagged by the lean measuring request.

1 be wrong to criticize Caltrans for not considering bark beetles. Plaintiffs did not meet their
2 burden in raising the issue of tree lean.⁸

3 **CONCLUSION**

4 This order will not reach any other criticisms made by plaintiffs, for the foregoing is
5 enough to set aside the 2017 EA/FONSI. The Court has considered all issues and finds that the
6 four criticisms set forth above are the most apt. Summary judgment is **GRANTED IN PART** in
7 favor of plaintiffs. Defendants' cross-motion for summary judgment is **DENIED**. Plaintiffs'
8 motion to allow their expert declaration is **DENIED AS MOOT**. Plaintiffs' request for attorney's
9 fees is **DENIED** without prejudice to a fresh motion on that issue alone.

10 * * *

11 By **MAY 23, 2019**, both parties must file supplemental briefing on whether, based on the
12 issues identified herein, preparation of an EIS should be mandated or if Caltrans should be
13 permitted to try again with an EA/FONSI. Each side is limited to twelve pages. The font must be
14 twelve point and double spaced. No footnotes. No attachments to the briefing or declarations
15 will be allowed. No motions for reconsideration will be allowed. By **JUNE 6, 2019**, each side
16 may reply to the other sides' briefing with replies limited as above but only six pages, not twelve.

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19 **IT IS SO ORDERED.**

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21 Dated: May 3, 2019.


22 **WILLIAM ALSUP**
23 **UNITED STATES DISTRICT JUDGE**

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27 ⁸ In one supplemental brief, Caltrans objected, requesting opportunity to respond to plaintiff's briefing.
28 This objection is **OVERRULED** (Dkt. No. 77 at 1-2). Each side had been given fair and equal opportunity to
present their arguments. In light of this order, all other objections are **OVERRULED AS MOOT** (Dkt. Nos. 88 at 7
n.4, 91, 94, 102, 103). The parties' various requests that this order take judicial notice of prior documents from
the record and Caltrans' prior rescission are **DENIED AS MOOT** (Dkt. Nos. 63 at 7 n.3, at 25 n.8; 65-3).