CALIFORNIA CHAPARRAL INSTITUTE

...the voice of the chaparral

Stanislaus National Forest
Attn: Rim Fire Reforestation
19777 Greenley Road
Sonora, CA 95370

January 10, 2016

Dear Supervisor Higgins,

We are disappointed that the Stanislaus National Forest (SNF) ignored our well researched scoping letter comments when developing the Rim Fire Reforestation Draft Environmental Impact Statement (DEIS). This is contrary to the intent and spirit of the National Environmental Protection Act.

The SNF continues to refer to native shrubland plant communities with pejorative language and ignores the important role they play in maintaining biodiversity. This is contrary to the US Forest Service's Ecological Restoration Implementation Plan.

And despite stating that one of the main goals in the DEIS is to help create, "*a fire resilient mixed conifer forest that contributes to an ecologically healthy and resilient landscape rich in biodiversity*," the DEIS was heavily influenced by the older forestry paradigm that values timber above other objectives. The document illustrates the difficulty the SNF is having between reconciling true ecological management with silviculture.

After more than a century of logging, excessive use of chemical pesticides (the SNF was responsible for spraying approximately half of the pesticides used in all of Region 5 in 2003), and the planting of overly dense tree plantations that were responsible for much of the high-severity behavior during the Rim Fire, the SNF is in need of a comprehensive ecological management plan. The current DEIS is a step in the wrong direction.

We urge the SNF to truly embrace ecological management over outdated forestry paradigms. We offer the following comments to help facilitate this process.

Inappropriate Reforestation and Thinning

We have examined a significant number of areas within the Rim Fire perimeter and have matched them with the proposed treatments. Many treatments do not make sense from either fire resiliency or ecological goals. The proposed treatments west of Cherry Lake provide examples (Figure 1).

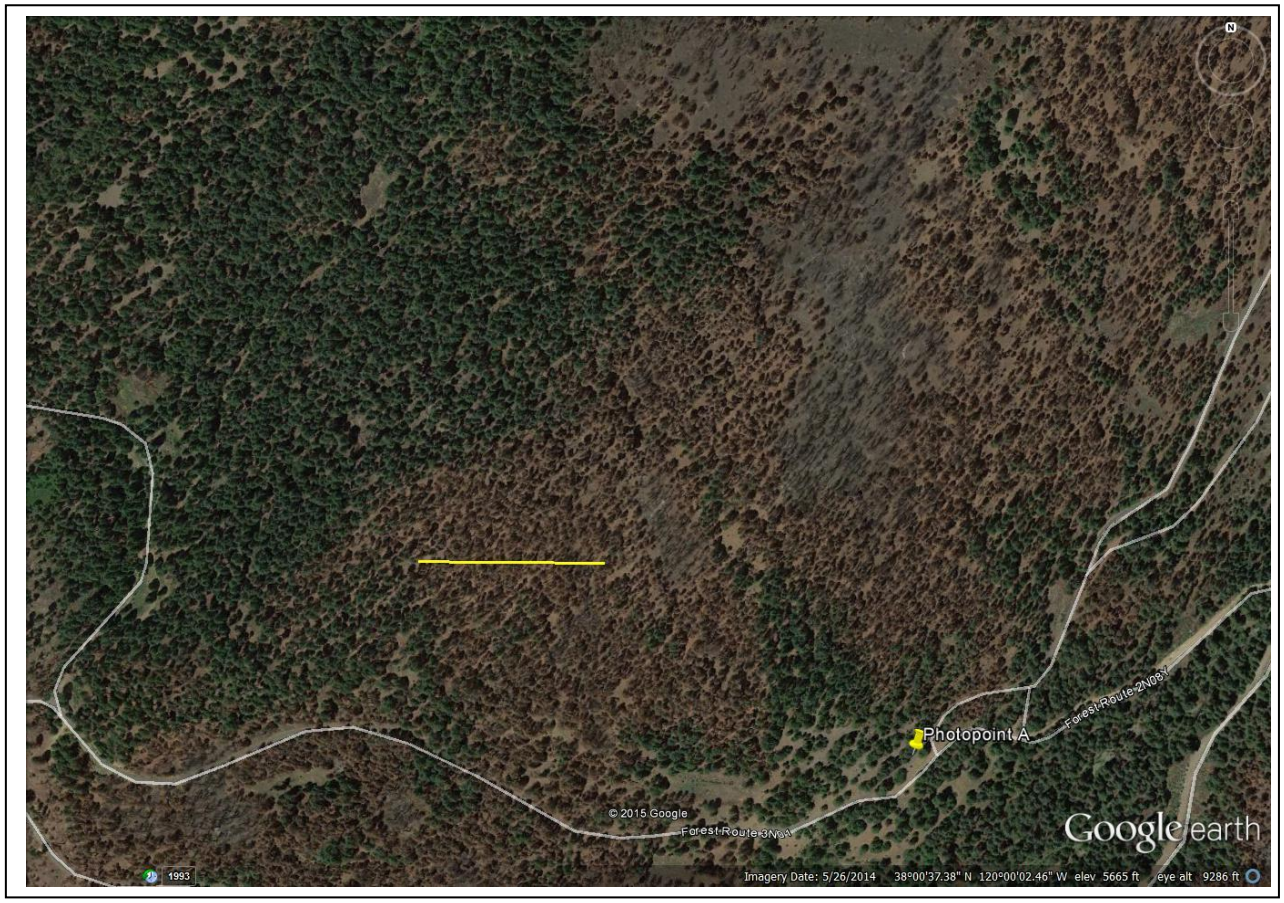

Figure 1. Google image of the forest north of USFS Route 3NO1, west of Cherry Lake. Yellow line represents 200 meters, the distance between two seed sources. Photos from Photopoint A (yellow pin mark) are shown in Figures 3 and 4.

The area shown in Figure 1 above illustrates the classic mixed-severity fire pattern that both the scientific community and the US Forest Service have agreed is of the type one would expect in a healthy, mixed-conifer forest. As a reasonable metric for comparison, studies in dry interior conifer forests have shown that one hundred meters between living seed source trees is the approximate maximum distance for successful natural regeneration within the first 75 years post fire (Sparkle et al 2015). Yet, this area is targeted for reforestation as shown in Figure 2. This would be the perfect site to allow natural regeneration to proceed without disturbance.

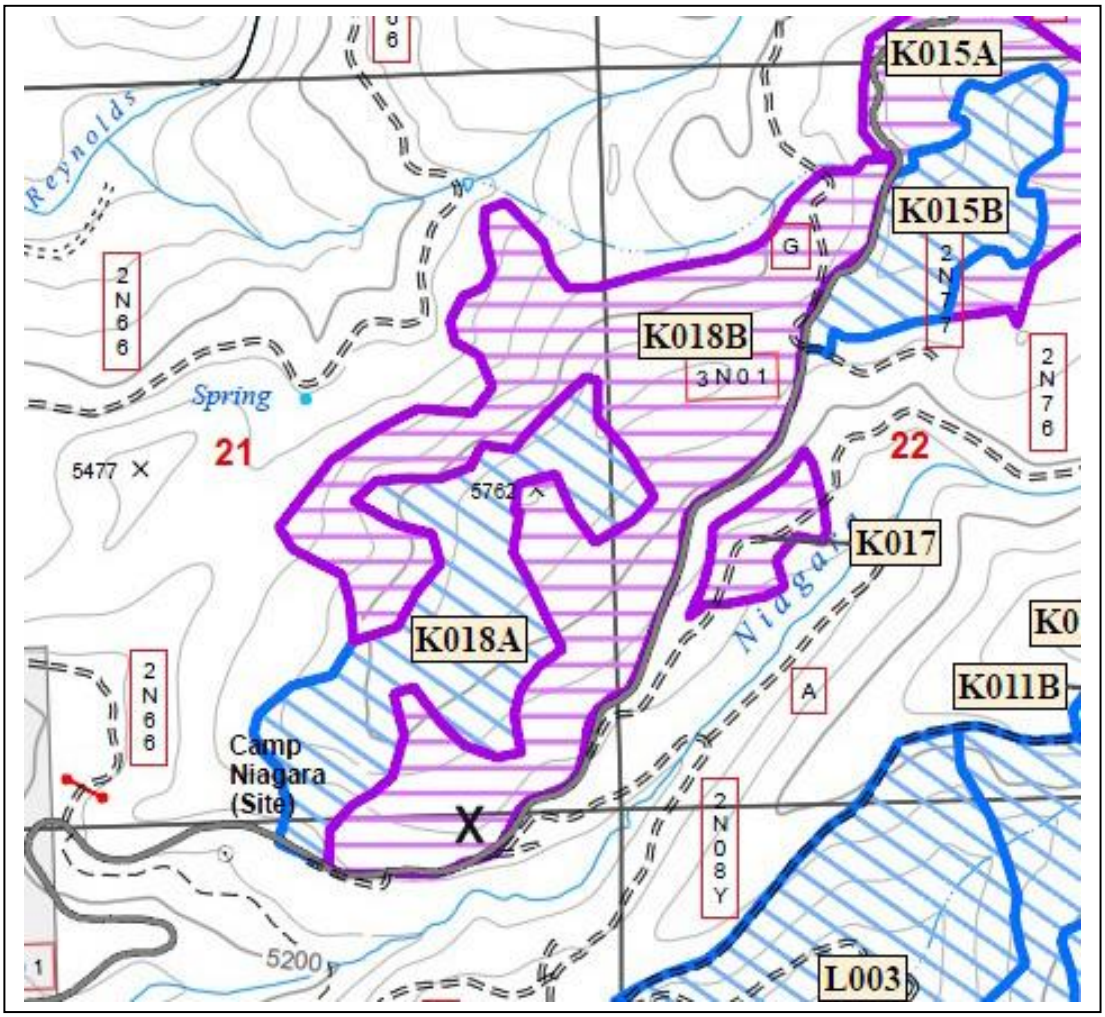

Figure 2: Proposed treatments west of Cherry Lake from DEIS map. Purple represent thinning, blue, reforestation. "X" represents Photopoint A shown in Figure 1.

More perplexing is the area proposed for thinning treatment with the objective of making the forest more fire resilient (Figure 2, purple hash marks).

Figure 3 below shows a photo of the proposed thinning treatment area looking north from approximately Photopoint A (marked with "X" in Figure 2 above). This area was burned during the Rim Fire at low-intensity as can been seen by the fire scars on some of the conifers, the dead saplings, and the burned log.

We do not know the logging/tree planting history of this area because our request for such information on the SNF was only recently honored and we have not had time to examine the data adequately - it took nearly two years for the US Forest Service to provide our Freedom of Information request. But it is clear that this area represents one of the low-intensity patches with larger conifers that can contribute to a future old-growth

forest community. This patch represents the kind of conifer "clustering" necessary to provide the diversity of habitat the DEIS indicates is an important objective.

Figure 3. Low-severity burn patch north of Route 3NO1 looking north from Photopoint A.

Directly across the dirt road, looking south, however, is an extremely dense, monotypic pine tree plantation that represents a significant fire threat (Figure 4). No treatment is proposed for this area in the DEIS.

Figure 4. A pine tree plantation looking south from Photopoint A.

While we support the thinning of pine tree *plantations* as proposed in the DEIS, like the areas west of Cherry Lake, we question the decision-making process when dense tree plantations remain while biodiverse, pre-old-growth tree clusters are proposed for treatment.

We also support reforestation in large high-severity burn areas (beyond 100 meters from potential living seed trees) that show no sign of regeneration and in areas damaged by salvage logging. Based on our examination of the proposed treatments, however, there are many areas that should be left to natural processes in order not to create the overly-dense tree plantations of the past.

At the very minimum, the EIS must make clear the current level of regeneration for each proposed management polygon as well as indicating the nearest conifer seed source. Otherwise, the public cannot properly evaluate the efficacy of the proposed Project.

Finally, regarding reforestation, the DEIS states,

> *…management feasibility would improve if increasing fuel loads and stand densities are balanced with larger trees that can at least partially offset operational costs when thinned.*

Is it reasonable to assume that the US Forest Service will enter these reforested areas after several decades to do the actual thinning? Much of the area burned by the Rim Fire consisted of 15 to 40 year old plantations that were not thinned. A plan to remove shrubs and stock high densities of trees so that they can later be logged for timber sales is not consistent with past practices, ensuring that "vegetation and fire management efforts are grounded in concern for biodiversity and ecological process…," nor creating a "fire resilient mixed-conifer forest that contributes to an ecologically healthy and resilient landscape rich in biodiversity."

Ignoring Best Available Science

We provided four scientific research articles in our scoping comment letter which address the ecology of post-fire landscapes dominated by mixed-conifer and shrub habitats. The topics covered by this research include conifer nutrition facilitated by mycorrhizae interconnected to manzanita (*Arctostaphylos sp.*), shrubs which reduce drought stress, and documented succession of post-fire shrub regeneration leading to forest domination (Horton et al. 1999, Zavitovsky and Newton 1969, Gomez-Aparicio et al 2004, Russell et al. 1998). These papers were not addressed in the Rim Fire DEIS. Consequently, the full range of direct, indirect, and cumulative effects of removing shrubs by means of herbicides, ground tilling, and related release treatments were not analyzed.

Research afforded by Saigo (1969) indicates that rodent activities play important contributions to the natural regeneration of ponderosa pines following major disturbances

such as fire. Even when considering the ease of visibility for herbivores and competition for water inherent to saplings growing as clumps, the advantages given to pine saplings germinating from rodent caches seem to outweigh the disadvantages (Saigo 1969). Even though we cited this paper in our previous scoping comment letter, and the Rim Fire Reforestation DEIS cited Saigo (1969), these facts are ignored.

While the DEIS makes mention of the nitrogen-fixing capacity of some shrubs found in montane chaparral habitats, the benefits of montane chaparral are under-represented in this DEIS' framework of proposed and alternative actions. It is imperative that Proposed Actions in the upcoming Environmental Impact Statement (EIS) do not neglect the benefits associated with shrublands within the Rim Fire perimeter.

Deep Tilling is Not Consistent with Ecological Goals

Deep tilling is silviculture. It has no place in the management of ecologically healthy forests with rich biodiversity.

Foresters have known for years that soil disturbance and the resulting reductions in mycorrhizal formations can negatively impact outplanted seedlings of conifers (Amaranthus 1990). Although some progress has been made in understanding the role of soil microorganisms and the impact of soil disturbance in grasslands, very little is known about the mycorrhizal ecosystem within native forest communities other than the fact that they play a critical role in forest health.

The DEIS states on page 127 that "deep tilling under Alternative 1 would expose soil to colonization by weed species, but the associated planting could reduce this effect in the long term by establishing a canopy to discourage the continued occupation of the site by sun-loving weed species."

The canopy required to inhibit the growth and spread of invasive grasses and weeds will not be achieved for several decades. However, montane and mixed chaparral, the plant community the DEIS demonizes, creates such a canopy within the first few years of growth.

Herbicide Use on Natives is Not Consistent with Ecological Goals

There exists no ecological justification for the use of herbicides on native plants. The proposal to herbicide 16,215 acres of land, as found in Alternative 1, will remove the possibility of natural forest succession for the next several decades in those areas treated and will likely result in significant loss of biodiversity.

The DEIS acknowledges that not every part of any given acre would actually be sprayed with herbicides. However, it should be understood that those areas which will be sprayed have a significant chance of being invaded by non-native grasses and weeds.

This is evident in a study conducted across mixed-conifer forests in Sierra Nevada national forests whereby herbicide-treated stands were found to have significantly greater alien grass and forb cover and species richness (McGinnis et al. 2010). Alien grasses and forbs take advantage of the greater amount of solar radiation on the ground following removal of shrub cover by means of herbicides (McGinnis et al. 2010).

Invasion of flammable, non-native grasses and weeds begins a positive feedback loop. Increased flammability increases the chance of ignition. This increases the chance of recurrent fires which increases the spread of grasses and weeds. For example, herbicide-treated stands which burned three times had significantly greater grass and forb fuel loads than herbicide-treated stands which burned once (McGinnis et al. 2010).

The DEIS indicates that 30 invasive and non-native species are present or found within five miles of the Project area. Eleven of these are considered to have a high chance (76-100%) of infesting a new area. Medusahead (*Taeniatherum caput-medusae*), yellow star-thistle (*Centaurea solstitialis*), and tocalote (*Centaurea melitensis*) collectively occupy almost 7,000 acres of land.

Barbed goatgrass is considered to have a high chance of infesting new areas. Scotch broom, bachelor button, cheatgrass, and Spanish broom were said to be found within the fire perimeter but are not listed with priority or current acreage.

On page 127, the DEIS acknowledges these problems when it states that weeds and grasses such as medusahead, yellow star-thistle, barbed goatgrass, Scotch broom, and others,

> *…change the arrangement of vegetation, the amount of soil moisture at specific times of the year, the amount of fuel available to burn, and how fire behaves (Keeley et al. 2011). These changes in fire behavior often mean that areas that would not ordinarily burn frequently or at a high intensity are now doing so (DiTomaso and Healy 2007).*

Conifer plantations treated with herbicides to reduce the number of shrubs are still capable of producing heat strong enough to kill trees found within mixed-conifer forests. For example, fire behavior models of conifer plantations treated with herbicides to remove shrub cover found that surface fire intensity would still be great enough to kill most trees because of the conifers' small size and low crown heights in the first two decades after planting (McGinnis et al. 2010).

Considering the well known negative impacts of invasive species, the US Forest Service needs to restrict its use of herbicides in ways that will reduce invasive species rather than increasing them.

Timber over Ecologically Rich Forests

A key goal in Region 5's Ecological Restoration Implementation Plan (2013) is to,

> *Ensure vegetation and fire management efforts are grounded in concern for biodiversity and ecological process both before and after disturbances like fire.*

In addition, as stated by the DEIS document, the overall purpose of the Rim Reforestation Project is to,

> *…create a fire resilient mixed conifer forest that contributes to an ecologically healthy and resilient landscape rich in biodiversity.*

Although the current document makes efforts to move away from the monotypic tree farm forestry model of the past with an emphasis on heterogeneous forest structure, there remains a conifer-centric bias that diminishes the chances of creating a forest rich in biodiversity.

This is apparent when the DEIS document assumes that "the land will mostly return to continuous woody brushfields that impede wildlife movement" and iconic shrub species such as manzanitas and Ceanothus "remove the possible establishment of diverse forest habitat." Statements such as these ignore most of what ecologists understand about healthy, biodiverse forest ecosystems and natural succession.

The specter of a smothering wave of shrubbery covering the landscape is contrary to established science (Shatford et al. 2007, Zald et al. 2008). While there are some areas that will indeed favor shrubs over conifers, especially in high-severity burn patches without nearby conifer seed sources, demonizing native shrubland habitat is a testament to the schizophrenia the DEIS suffers between silviculture and ecological goals.

Beyond the value of native shrubland communities mentioned above, the final EIS needs to consider the following.

1. Landscapes devoid of shrubs are prone to be invaded by non-native grasses and weeds.
Grass fuels produce sufficient heat to cause severe scorching in young conifers (Weatherspoon and Skinner, 1995). For example, the alien grass-fueled St. Pauli Fire of the nearby Eldorado National Forest killed approximately 70,000 planted trees in 2001 (McGinnis et al. 2010).

2. Early successional areas comprised of montane and mixed chaparral and mixed-conifers provide unique landscapes for biodiversity.

In a study of mule deer winter ranges near Trinity Lake, Loft and Menke (1984) found that plots with the highest deer use had high cover of deer brush (*Ceanothus*

integerrimus). Subsequently, deer use increased as hiding cover less than 0.5m in height and deerbrush cover increased.

Mule deer depend on hiding cover. Hiding cover increases as shrub vegetation increases. As such, statements found within the DEIS which falsely characterize chaparral habitats as ones which "impede wildlife movement" will not contribute to a future EIS based upon science. Rather, these statements are used to justify the clearance of native habitats.

3. Chaparral shrubs provide important nutritional value. A study conducted within the Sierra National Forest found that deer brush has high concentrations of calcium (Kie 1986). When combined with other browse species, deer brush plays an important role in the nutrition of adult and fawn deer during summer months.

4. Clearance of chaparral has also been recently suspected of facilitating the spread of Lyme disease in vertebrates (Newman et al. 2015).

5. Bird diversity increases with the presence of shrubs. Shrub nesting bird species, such as Fox Sparrow, Dusky Flycatcher, and MacGillivray's Warbler, were found to be more abundant in early successional shrub habitats 11 years after the Storrie fire (Burnett et al. 2012). In this same study, 16 avian species were found to be significantly more abundant in burned areas. Consequently, they stated:

> *While some snag associated species (e.g. Black-backed Woodpecker) decline five or six years after a fire, those associated with understory plant communities take their place resulting in similar avian diversity three and eleven years after fire.*

6. Several affected and sensitive plant species are found within montane and mixed chaparral habitats of the Rim Fire perimeter. Deer brush (*Ceanothus integerrimus*), Nissenan manzanita (*Arctotaphylos nissenana*), bear clover (*Chamaebatia foliolosa*), Sierra gooseberry (*Ribes roezlii*), Small's southern clarkia (*Clarkia australis*), Mariposa clarkia (*Clarkia biloba ssp australis*), slender-stemmed monkeyflower (*Mimulus filicaulis*), and goldencarpet buckwheat (*Eriogonum luteolum*) are all found within Sierra Nevada chaparral. *C. biloba ssp. australis, C. australis,* and *M. filicaulis* are sensitive species, whereas suitable habitat within the Project area exists for *M. nissenana* and *E. luteolum*.

7. The presence of bear clover is a sign of forest health. Philip and Fiddler (1999) studied the recovery of bear clover (*Chamaebatia foliolosa*) following site preparation and planting of ponderosa pine seedlings. By the end of the study, a majority (69%) of the seedlings survived, while the plant community was dominated by both ponderosa pine and bear clover. Cheatgrass (*Bromus tectorum*) comprised most of the grass population, but was a minor constituent of the plant community most likely due to the presence of bear clover. In addition, the study states in its introduction that bear clover stands occupy areas ranging from small patches to hundreds of acres, excelling in partial shade provided from ponderosa pines and incense-cedars. Therefore, using herbicides on native plants, which thrive under the conditions provided by conifers, does not coincide

with a goal of creating an "ecologically healthy and resilient landscape rich in biodiversity."

Figure 5. Bearclover covering the ground in a healthy ponderosa pine forest in Amador County, California. The forest had been thinned by CalFire.

Truly Valuing Biodiversity

We requested in our scoping letter that the value of native biodiversity should be acknowledged by eliminating the use of pejorative references to native shrubs and shrubland plant communities. Unfortunately, our request was largely ignored. The terms "brush" and "brushfields," used 55 times in the DEIS, are employed to demonize shrubland habitats. This approach is based on the timber harvesting paradigm, not ecological research.

The use of such pejorative language makes it impossible for the US Forest Service to address environmental and ecological questions in an objective, factual, and scientific manner.

The DEIS asserts that, based on CALVEG cover type classifications, shrubs account for 14.71% of the land within the Stanislaus National Forest. On the other hand, by comparing estimates from Show and Kotok (1924) and USFS vegetation maps from the mid-2000's, the amount of land occupied by shrublands, such as montane and mixed chaparral, has been reduced significantly within the Stanislaus National Forest. Based on these estimates, chaparral recently covered 9.9% of the Forest as opposed to 16.2% in

1924. The US Forest Service can begin the process of valuing shrubland habitats by reconciling these numbers.

We understand the importance of creating "fire resilient" forests and restoring those forests that have been damaged by unusual fire. We recognize past abuses to our forests, starting with overgrazing, followed by logging, then exacerbated by fire suppression, need to be addressed. Coupled with climate change, the current condition of the mixed-conifer forests on the western slope of the Sierra Nevada below 7,000 feet poses serious challenges to management.

If we intend to successfully meet those challenges, we must be honest in our approach. If it is timber we want, we need to say so. If we desire biologically diverse, ecologically rich forests, we need to reconcile the conflicts this goal has with the old forestry paradigm. Based on changing demographics, the desires of the public for more natural open space, and the threat of climate change, the need for forest management to shift more towards an ecologically-based/preservation approach will only grow.

We remain hopeful the final EIR for the Rim Fire Reforestation Project will reflect this need.

Sincerely,

Richard W. Halsey
Director

Sebastian Revels
Conservation Research Associate

Citations

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