Appendix A

Notice of Preparation and
NOP Comments

Notice of Preparation

To: Distribution List
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Subject: Notice of Preparation of a Program Environmental Impact Report for the California Vegetation Treatment Program

Introduction:

The California Board of Forestry and Fire Protection (Board) is preparing a Program Environmental Impact Report (PEIR) for the proposed California Vegetation Treatment Program (CalVTP), described below. Under the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) would implement vegetation treatments to reduce wildfire risks and avoid or diminish the harmful effects of wildfire on the people, property, and natural resources in the State of California. To counteract decades of fire suppression, vegetation treatment activities would be designed to reduce fire fuels, improve protection from wildfire through strategically located fuel breaks, and mimic a natural fire regime using prescribed burning. In addition, ecosystem restoration activities would be designed to approximate natural habitat conditions, processes, and values to those occurring prior to the period of fire suppression. The PEIR will analyze the potential environmental effects of the proposed CalVTP.

In response to these changing environmental conditions and the increased risk to California's citizens, Governor Brown issued Executive Order (EO) B-52-18, which mandates an increase in the pace and scale of fire fuel treatment programs to reduce wildfire risk. The proposed CalVTP is one tool intended to address Governor Brown's mandate to increase the pace and scale of fire fuel reduction efforts across the state.

Under Section 15168 of the California Environmental Quality Act (CEQA) Guidelines, a PEIR may be prepared on a series of actions that can be characterized as one large project and are related to, among other things, the issuance of general criteria to govern the conduct of a continuing program or individual activities carried out under the same authorizing statutory or regulatory authority, and having generally similar environmental effects that can be mitigated in similar ways.

An initial study was not prepared, because the Board determined that an EIR is required for the project. (CEQA Guidelines, Section 15063.) All applicable environmental topics will be addressed in the PEIR.

The Board is the lead agency and will prepare the PEIR for the proposed CalVTP. The Board is circulating this Notice of Preparation (NOP) for the PEIR to seek input from responsible and trustee agencies and other interested parties regarding the scope and content of the environmental information to be included in the PEIR.

Since a previous draft PEIR for the Vegetation Treatment Program (VTP) was released in 2017, substantial increases in wildfire size, intensity, and destructiveness to California's residents have occurred and are projected to continue to occur. As a result, the description and magnitude of treatment activities in the 2017 VTP have been modified and expanded to meet the worsening wildfire conditions being experienced. The Board is preparing a new draft PEIR for CalVTP that will supersede and replace the 2017 VTP draft PEIR. After the scoping process initiated by this NOP, the CalVTP Draft PEIR will evaluate potential environmental impacts, considering recent changes in wildfire conditions and the substantial expansion of proposed vegetation treatments in the CalVTP. As explained under Program Necessity below, there is an urgent need, supported by a mandate from the Governor per Executive Order (EO) B-52-18, to increase the pace and scale of vegetation treatments across California to reduce wildfire risk. This NOP is issued to solicit comments on the scope and content of a new PEIR that will analyze the impacts of the proposed CalVTP. Additional information regarding the necessity, scope, and design of the proposed CalVTP is included below.

Discretionary Action and Proposed Implementation Activities:

The Board is mandated to regulate forestry activities throughout the state and to develop policies and regulations that contribute to fire prevention and recovery efforts (Public Resources Code [PRC] Section 740). The Board is also charged with identifying State Responsibility Area (SRA) land and developing rules and regulations that enable CAL FIRE to prevent, respond to, and control fire events in those regions (PRC Sections 4130 and 4137). The Board's proposed discretionary action is approval of the CalVTP. After approval, implementation of the CalVTP will involve a proposed array of vegetation treatment activities carried out by CAL FIRE.

The CalVTP Draft PEIR, for which this NOP is being issued, will address the following:

- Expansion and modification of CAL FIRE's activities to implement the CalVTP, as described below. The proposed total treatment acreage target is 250,000 acres of nonfederal land per year to contribute to the achievement of EO B-52-18, which is a substantial increase compared to the 2017 VTP Draft PEIR.
- Development and use of a project-specific approach for a streamlined CEQA review of site-specific, later vegetation treatment projects. The streamlined CEQA review approach will document how a project's environmental effects are covered and which feasible mitigation measures from the CalVTP PEIR are incorporated. This will include evaluation of whether later activities and impacts of site-specific vegetation treatment projects are within the scope of the CalVTP and the PEIR. A "within the scope" finding for later activities would facilitate an increase in the pace and scale of project approvals in a manner that includes environmental protections. Where later activities do not qualify for a "within the scope" finding, site-specific mitigated negative declarations or EIRs will be prepared.

Program Necessity:

Wildfires are a significant threat in California, particularly in recent years as the landscape responds to climate change and decades of fire suppression. Over 75 percent of forested areas and other woody vegetation types are burning less frequently than historic averages, and fire sizes have increased significantly over the last 17 years.[1] Drought conditions, low snow pack accumulation, and extreme temperature highs have also been prevalent in the last decade and are expected to worsen as climate change continues to alter landscapes and local climates.[2,3]

These conditions have resulted in the largest, most destructive, and deadliest wildfires on record in California history, all occurring in 2018. Fifteen of the state's 20 largest wildfires have occurred since 2002. The 2018 Mendocino Complex, the state's largest wildfire, burned 1.5 times as many acres as the next largest fire.[4] Fourteen of the state's 20 most destructive wildfires have occurred since 2003; the 2018 Camp Fire destroyed more than three times as many structures as the next most destructive fire.[5] Ten of

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[1] California's Forests and Rangelands: 2017 Assessment. Report. Fire Resource and Assessment Program (FRAP), California Department of Forestry and Fire Protection. http://frap.fire.ca.gov/assessment2017/FinalAssessment2017/Assessment2017.pdf.
[2] NOAA National Centers for Environmental Information, State of the Climate: National Climate Report for June 2018, published online July 2018, retrieved on December 6, 2018 from https://www.ncdc.noaa.gov/sotc/national/201806.
[3] Special Report: Global Warming of 1.5 Degrees Celcius. Report no. 2018. Intergovernmental Panel on Climate Change. https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf.
[4] "Top 20 Largest California Wildfires." Chart. California Department of Forestry and Fire Protection Incident Information. http://www.fire.ca.gov/communications/downloads/fact_sheets/Top20_Acres.pdf.
[5] "Top 20 Most Destructive California Wildfires." Chart. California Department of Forestry and Fire Protection

the state's 20 deadliest wildfires have occurred since 2003, and the 2018 Camp Fire resulted in more than twice as many deaths as the next deadliest fire.[6] Historically, California's wildfires were less severe, burning fewer acres and destroying fewer structures by factors of two and three, respectively, when compared with modern fire statistics.[7] Additionally, fire seasons have been extending further into the winter months since 2000. The fire sieges in October and December of 2017 serve as prime examples of the expanding fire season.[8] As environmental conditions become more conducive to larger and more severe wildfires, development in the wildland-urban interface (WUI) is also on the rise. A 2018 study indicates that the number of houses in the WUI increased nationwide by 41 percent between 1990 and 2010.[9] In response to these changing environmental conditions and the increased risk to California's citizens, Governor Brown issued EO B-52-18, which mandates an increase in the pace and scale of fire fuel treatment programs to reduce wildfire risk. The proposed CalVTP is one tool intended to address Governor Brown's mandate to increase the pace and scale of fire fuel reduction efforts across the state.

Program Description:

Various vegetation types serve as fuel for wildfires and can result in hotter and larger fires if left unmanaged.[10] The Board recognizes the link between fuels management and fire protection across the SRA, and has the statutory responsibility to establish policy for wildland resources in the SRA. CAL FIRE has the responsibility for implementation of Board policy, and would implement the CalVTP, as evaluated in the upcoming PEIR. Responsible and trustee agencies will need to use the PEIR when considering permit issuance or other approvals for individual vegetation treatment projects conducted under the CalVTP PEIR.

Certain types of vegetation treatments can alter fire behavior and mitigate the risks of larger, more severe wildfires throughout California. The CalVTP includes three general types of treatments:

> (1) Wildland-Urban Interface (WUI) fuel reduction, which is focused in WUI-designated areas and generally consist of treatments to reduce fuel loads and slow or prevent the spread of fire between wildlands and structures, and vice versa;
> (2) Fuel breaks, which are strategically placed vegetation treatment areas that actively support fire-control activities; and
> (3) Ecological restoration projects, which would generally occur outside the WUI in areas that have departed from the natural fire regime as a result of fire exclusion, and would focus on restoring ecosystem processes, conditions, and resiliency by moderating uncharacteristic wildland fuel conditions to reflect historic vegetative composition, structure, and habitat values.

Within these three general treatment types, treatment activities may include: prescribed fire, manual activities, mechanical activities, prescribed herbivory (beneficial grazing or browsing), and targeted ground application of herbicides. These activities are proposed to be used singularly or in combination, depending upon the treatment type and environmental considerations. The upcoming PEIR will study the potential environmental effects of the proposed CalVTP's strategic treatment of wildland vegetation with the overarching goal of wildland fire risk reduction.

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http://www.fire.ca.gov/communications/downloads/fact_sheets/Top20_Destruction.pdf.
[6] "Top 20 Deadliest California Wildfires." Chart. California Department of Forestry and Fire Protection http://calfire.ca.gov/communications/downloads/fact_sheets/Top20_Deadliest.pdf.
[7] "CAL FIRE Jurisdiction Fires, Acres, Dollar Damage, and Structures Destroyed." California Department of Forestry and Fire Protection Incident Information.
http://cdfdata.fire.ca.gov/pub/cdf/images/incidentstatsevents_270.pdf.
[8] "Fire Seasons by Year." California Department of Forestry and Fire Protection Incident Information.
http://cdfdata.fire.ca.gov/incidents/incidents_seasondeclarations?year=2018.
[9] Radeloff, Volker C. et al. 2018. Rapid growth of the US wildland-urban interface raises wildfire risk. Proceedings of the National Academy of Sciences. 115(13): 3314-3319.
https://doi.org/10.1073/pnas.1718850115.
[10] Husari, Sue, H. Thomas Nichols, Neil G. Sugihara, and Scott L. Stephens. "Fire and Fuel Management." Fire in Californias Ecosystems, 2006, 444-65. doi:10.1525/california/9780520246058.003.0019.

Program Area:

CAL FIRE has financial responsibility for fire protection and prevention in the SRA and would implement the CalVTP. The CalVTP would comprehensively direct the treatment of fire fuel to prevent wildfire in the SRA, which consists of more than 31 million acres of private and public land throughout the state. However, the not all areas within the SRA are be suitable for treatments. The portion of the SRA considered suitable for vegetation treatments under the CalVTP consists of 20.3 million acres referred to as the "treatable landscape." The treatable landscape is illustrated in Figure 1. WUI protection is a high priority for CAL FIRE, particularly following events such as the Tubbs Fire (2017), which began in wildlands and grew to burn much of suburban Santa Rosa, ultimately destroying 5,636 structures; the Carr Fire (2018), which traveled from wildlands into the developed neighborhoods of Redding; and the Camp Fire (2018), which destroyed most of the Town of Paradise. All three of these recent fires, and several others, have reinforced the importance of fuels management and fire prevention to reduce wildfire risk in and adjacent to the WUI. Much of the land surrounding the WUI falls in SRA, demonstrating the urgent need for the proposed CalVTP.

Probable Environmental Effects:

The PEIR for the CalVTP will present an analysis of the potential environmental impacts of the proposed CalVTP, including direct, indirect, and cumulative effects. The PEIR will identify potentially feasible alternatives to the proposed CalVTP and provide a comparative analysis of their potential impacts. The PEIR will also identify mitigation measures to reduce potentially significant impacts to the extent feasible. The EIR will address all the environmental topic areas identified in Appendix G of the State CEQA Guidelines. These topic areas will include, but may not be limited to:

- Aesthetics and Visual resources
- Agriculture and Forestry Resources
- Air Quality
- Archeological, Historic, and Tribal Cultural Resources
- Biological Resources
- Geology, Soils, and Mineral Resources
- Greenhouse Gas Emissions
- Energy Resources
- Hazardous Materials, Public Health and Safety
- Hydrology and Water Quality
- Land Use and Planning, Population and Housing
- Noise
- Recreation
- Transportation
- Public Services, Utilities and Service Systems
- Wildfire

Potential environmental effects may be probable in any of these topic areas. The PEIR will address all the topics. The Board is not yet able to determine with specificity the individualized effects within these environmental topic areas, or whether such effects will be less than significant, less than significant with mitigation, or significant and unavoidable.

CEQA Scoping:

Public and Agency Scoping Meetings: Because the proposed CalVTP is a project of statewide, regional, or areawide significance, the Board will hold scoping meetings, in accordance with PRC Section 21083.9(b)(2) and CEQA Guidelines Section 15206. Invitees include the following: responsible agencies; "public agencies with jurisdiction by law with respect to the project" (including trustee agencies); any "public agency, organization or individual who has filed a written request for the notice;" and potentially affected cities and counties.

Because of the statewide scale of the proposed CalVTP, the Board is conducting three scoping meetings, with one in Northern California, one in Sacramento, and one in the Los Angeles region. The scoping meetings will be web-broadcast over the internet. The meetings will occur as follows:

Monday, February 11, 2019, 1-3pm
Natural Resources Building Auditorium
1416 9th Street
Sacramento, California
Webinar information: https://attendee.gotowebinar.com/register/1182936368317342977

Wednesday, February 13, 2019, 10am-12pm
Shasta County Board of Supervisors
1450 Court Street
Redding, California
Webinar information: https://attendee.gotowebinar.com/register/1891381396907387905

Tuesday, February 19, 2019, 12-2pm
California Fire Safe Council Ontario Office Meeting Room
3200 Inland Empire Boulevard
Ontario, California
Webinar Information: https://attendee.gotowebinar.com/register/5611350291531610626

Special Agency Scoping Meetings: Pursuant to PRC Section 21080.4(b), responsible and trustee agencies have the right to request a meeting to determine the scope and content of the environmental information required. Please contact the Board at the addresses below to request such a meeting. Responsible and trustee agencies are also invited to attend the Public and Agency Scoping Meetings required by PRC Section 21083.9.

Submittal of Comments:

Due to the time limits mandated by State law, any comments on this NOP must be submitted no later than 30 days from the date of this notice. To be considered in development of the CalVTP PEIR, comments must be received by March 1, 2019. Comments may be submitted by mail or email at the addresses below. Please include the name of a designated contact person for your agency or organization.

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Land Use Planning Program Manager
Email: CalVTP@bof.ca.gov
Mail: PO Box 944246
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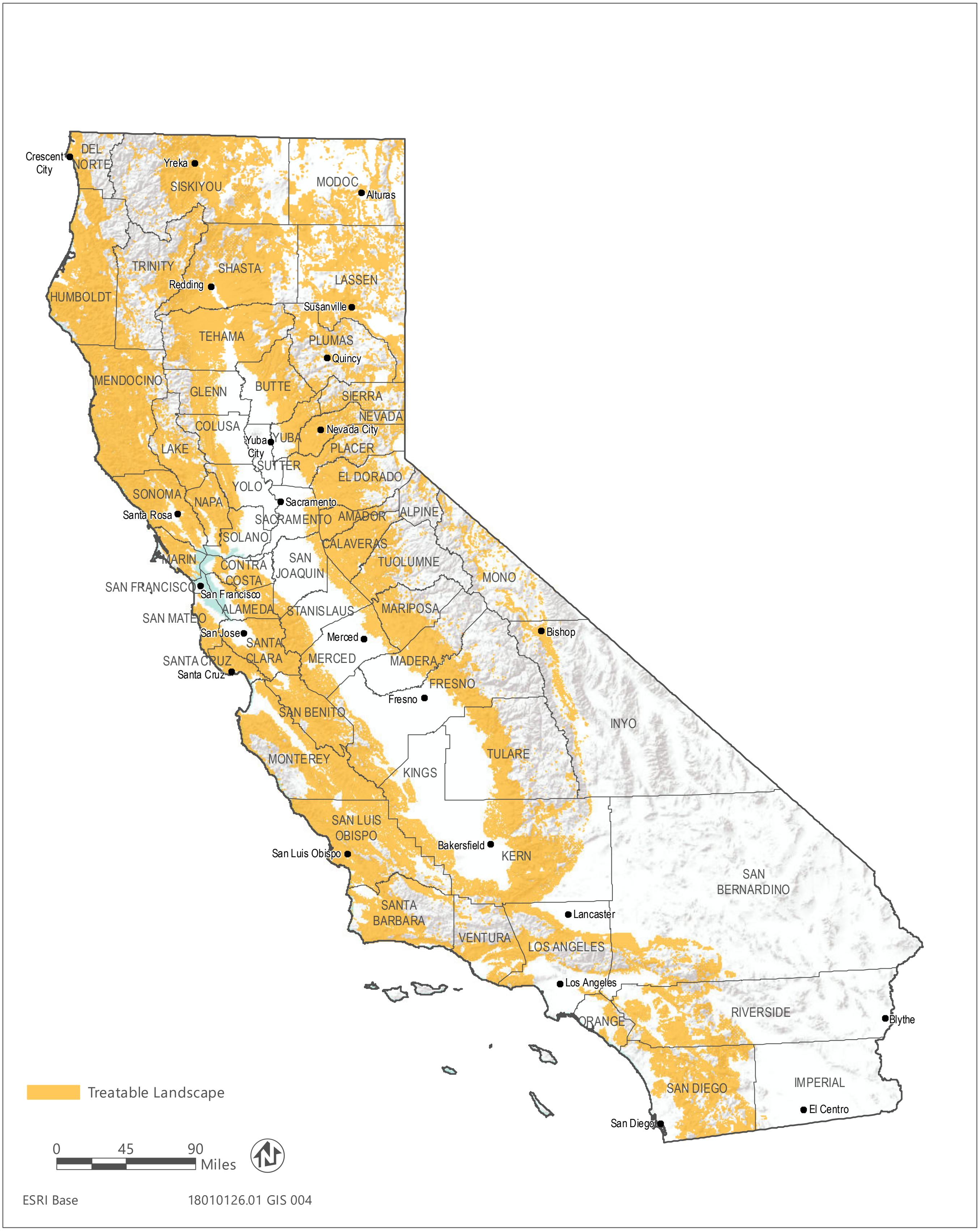
The Board will also accept verbal comments from those physically attending the scoping meetings, but the Board will not accept comments submitted over the webinar during the meetings. The Board will also collect written comments at the scoping meetings. Because this is a new Program Environmental Impact Report, the Board will not be considering comments on other Draft PEIRs.



Source: Data received from the Department of Forestry and Fire Protection in 2019

1/14/2019

Treatable Landscape

Figure 1

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
Received by Email/Letter		
Joan Brockman March 1, 2019	▸ Supports recommendations enumerated in Chaparral Institute letter	See California Chaparral Institute comment summary
California Chaparral Institute February 25, 2019	▸ Expresses opposition to the "fuel-centric approach as described in the Notice of Preparation;" ignores the wind-driven fires that cause nearly all the devastation to our communities	1 Introduction & 2 Program Description
	▸ Questions the NOP's "fundamental assumption that fire suppression is directly responsible for catastrophic wildfire	Not a CEQA issue
	▸ Focus on wind-driven, fine-fueled, ember-generating fires	6 Alternatives
	▸ Native shrublands have suffered from too much fire	3.6 Biological Resources
	▸ Treatments in CalVTP do not protect communities from embers from wind-driven fires and do not address fine fuels	Not a CEQA issue
	▸ NOP ignores science from Jack Cohen demonstrating the wildfire problem is a home ignition problem, not a wildfire control problem"	1 Introduction & 2 Program Description
	▸ Ecological restoration projects only apply to limited areas such as lower elevation mixed conifer forests.	2 Program Description & 3.6 Biological Resources
	▸ Use scientific evidence rather than anecdotes	3 Environmental Setting, Impacts & Mitigation Measures
	▸ NOP s approach will make California more flammable by focusing on forested areas rather than human development; facilitate the movement of embers towards homes; increase the amount of flashy fuels; increase fire rate of spread; failing to address the most dangerous accumulation of dead fuels – homes	6 Alternatives
	▸ The Board's and CAL FIRE's traditional approach to wildfire protection needs to change; offers 24 recommendations	Not a CEQA issue
	1. Shift focus to save lives, property, and natural habitats instead of expecting to control wind-driven wildfires	1 Introduction & 2 Program Description
	2. Create separate, regional Program EIRs	6 Alternatives
	3. Science-based defensible space	1 Introduction
	4. Require any WUI VTP project include structure and community retrofits	1 Introduction & 6 Alternatives
	5. CAL FIRE should have a well trained and adequately staffed Defensible Space Inspection Program	1 Introduction & 6 Alternatives
	6. Science-based defensible space compliant plant list	
	7. Train officials, fire marshals, and defensible space inspectors; draft EIR should set the framework to develop such a program as a mitigation process	1 Introduction
	8. Help with grants and retrofits	1 Introduction & 2 Program Description & 6 Alternatives
	9. Reassess the efficacy of back country fuel modifications	
	10. Recognize that all chaparral is potentially threatened by excessive fire frequencies	
	11. Account for biodiversity in chaparral	3.6 Biological Resources

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
	12. Detail impacts	3 Environmental Setting, Impacts & Mitigation Measures
	13. Consultation on chaparral treatments; treatments in old growth chaparral should be developed in consultation/agreement with CNPS	2 Program Description & 3.6 Biological Resources
	14. Create fire risk maps; CAL FIRE hazard maps do not depict risk	Not a CEQA issue
	15. Reduce human-caused ignitions	Not a CEQA issue
	16. Comprehensive evacuation plans	1 Introduction
	17. Climate action is fire prevention; CAL FIRE should maximize stations for PV solar production, electric vehicles, offset GHG emissions of emergency vehicles; stations should be retrofitted for energy and fire hardening	Not a CEQA issue
	18. Proper accounting of carbon sequestration; recalculate the potential increase in atmospheric carbon from the proposed program to account for the loss of below ground carbon sequestration in healthy chaparral communities due to fuel treatments	3.8 Greenhouse Gas Emission
	19. Define terms	Chapters 1 through 6
	20. Maintain consistency and research quality	3 Environmental Setting, Impacts & Mitigation Measures
	21. Increase transparency via a web-based public notification process for projects	1 Introduction & 2 Program Description
	22. Plan for the future; base projects on projected climate change scenarios, not past anecdotal experiences	3 Environmental Setting, Impacts & Mitigation Measures
	23. Collaboration	Not a CEQA issue
	24. Peer-review; submit the draft EIR to an independent, science-based peer review process prior to its public release	Not a CEQA issue
California Invasive Plant Council March 1, 2019	▸ Fuel modifications are important but present a risk of weed spread. The VTP should incorporate other aspects such as ignition reduction strategies and fire-safe landscaping. It's also important to recognize regional differences, especially in Southern California where wildfires are a result of wildfire-driven type conversion.	1 Introduction & 2 Program Description
	▸ The formal adoption of BMPs to reduce weed spread (see Cal-IPC's *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers*). Comprehensively assess the disturbance from fuel breaks and fuel modification zones and work towards focusing them in areas that are already disturbed that help protect communities and that minimize disturbance-facilitated weed spread.	2 Program Description & 3.6 Biological Resources
	▸ The VTP should have a structure in place to address the funding required to implement strategic invasive plant management during post-fire recovery. The PEIR should evaluate the potential impact of delayed or deficient post-fire weed management activities.	Not a CEQA issue
	▸ VTP should work with established collaborative groups to set a strategy for regional invasive plant management. Explicitly mention collaborative efforts such as Cal-IPC's work with CDFA and county-based Weed Management Areas and the	2 Program Description & 3.6 Biological Resources

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
	importance of working together with those managing other lands, including federal landowners and private landowners.	
	▶ Each region of California has significant invasive plant challenges to be addressed. We suggest that invasive plant management approaches by applied across the board in the design of the VTP.	3.6 Biological Resources
	▶ Recommend that the PEIR reflect the priorities of other relevant state plans, including the state's strategic framework on invasive species, the California State Wildlife Action Plan, and the state's new Biodiversity Initiative	3.6 Biological Resources
California Native Plant Society March 1, 2019	▶ California s catastrophic wildfires and associated loss of life and property are as much a people problem (building codes, ignition sources, bad planning) as they are a vegetation program, and the NOP, the VTPEIR, and the VTP must acknowledge that.	1 Introduction, 2 Program Description & 6 Alternatives
	▶ Clarify the purpose and need of the new VTP to avoid conflating two important but different goals: preventing homes and communities from burning, and returning forests to more natural conditions.	1 Introduction & 2 Program Description
	▶ Vegetation treatments beyond defensible space in chaparral and coastal sage scrub, eg 30' to 50' wide fuel breaks, can provide safer deployment opportunities for fire crews. Fire breaks provide no restorative or ecological benefit as can occur with forests and must be considered a natural resource sacrifice for the sake of strategic firefighting, and be mitigated for commensurate with program impacts.	2 Program Description & 3.6 Biological Resources
	▶ The VTPEIR must present maps of previous vegetation treatments, and data demonstrating the effect of the treatments on the goals it was expected to achieve...these data must be presented in the VTPEIR to demonstrate how vegetation treatments of various ages affected the behavior of wildfires.	2 Program Description
	▶ An effective VTP must be clear where and why vegetation treatments would occur in, around, and distant from communities. The NOP is not clear because it conflates treatment goals.	2 Program Description
	▶ Redefine treatment types based on whether they occur in predominately forest or chaparral/coastal sage scrub landscapes, on their proximity to life and property, and clarify the intended treatment outcomes for each type.	2 Program Description & 3.6 Biological Resources
	▶ The VTPEIR must define how project level analysis and review will be achieved and how the public will able to participate in the process.	2 Program Description/Appendix PD-3 Project-Specific Analysis
	▶ CNDDB is known to be incomplete and cannot be relied upon; current surveys of project sites are always necessary to determine what occurs there.	2 Program Description & 3.6 Biological Resources
	▶ VTPEIR must employ the most up to date vegetation maps and fire ecology of vegetation types in its selection of treatments, analysis of potential impacts to rare natural communities, and to	3.6 Biological Resources & 4 Cumulate Effects Analysis

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
	track cumulative impacts to plant communities as a result of VTP implementation.	
	▸ Valid botanical surveys must be conducted under CDFW protocols and current state standard vegetation maps must be employed in order to analyze the kinds of impacts that may occur, and what types of avoidance, minimization, or mitigation of impacts might be necessary.	2 Program Description & 3.6 Biological Resources
	▸ The VTP must define how cumulative effects of projects implemented under the VTPEIR will be monitored and reported, how future conditions include climate change will be incorporated into project treatment assessment and analysis, and how the VTP will be adapted based on the findings of these analyses.	4 Cumulative Effects Analysis
Cal OES February 14, 2019	▸ The positive impacts of the CalVTP should be described in the PEIR due to the passage of AB 2782 (Friedman).	3 Environmental Setting, Impacts, & Mitigation Measures
	▸ Recommend using the new 2019 CEQA Checklist to address wildfire environmental considerations.	3 Environmental Setting, Impacts, & Mitigation Measures
	▸ Cal OES will share all available information relevant to the CalVTP as requested.	Not a CEQA issue
Caltrans March 1, 2019	▸ Include the State Highway System (SHS) Right-of-Way (R/W) for the scope of the CalVTP PEIR.	1 Introduction & 2 Program Description
	▸ Requests engagement with HQ Division of Maintenance – Forest Management Program, HQ Division of Environmental Analysis, and HQ Division of Traffic Operations – Encroachment Permits to outline fuels treatment project priorities, environmental compliance, and maintenance cycle to maintain defensible space within the SHS R/W	1 Introduction & 2 Program Description
	▸ Maintaining defensible space in the SHS R/W will require encroachment permits	2 Program Description
	▸ Include technical practices and procedures that will need to be further defined by District Maintenance, Environmental and Design staff	2 Program Description & 3.15 Transportation
	▸ Traffic safety concerns related to smoke from prescribed fire. Consider sight distance and logistics staging of workers, equipment, and activities	2 Program Description & 3.15 Transportation
	▸ Caltrans performs fire hazard control activities on roadside grasses, but additional fuels treatment is needed to address all level of fire fuels, which includes embankment protection and potential ditch debris removal. Requests collaboration with CAL FIRE to identify and partner on projects within VHFHSZ along highways.	1 Introduction
	▸ Transportation Management Plan should be prepared with Caltrans input to outline the process of minimizing projects related traffic impacts and delays associated with prescribed burns and vegetation control adjacent to SHS areas.	2 Program Description & Appendix PD-3 Project-Specific Analysis
	▸ Any work in a Caltrans R/W requires an encroachment permit	1 Introduction & 2 Program Description

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
	▸ Request CAL FIRE engage with Caltrans District Traffic Operations and Permits staff for encroachment permits, impacts to SHS and its travelers, traffic control measures of other mitigation measures, and other requirements such as tree trimming and removal procedures.	1 Introduction & 2 Program Description
	▸ Provide hydraulics studies, drainage, and grading plans to Caltrans for review as required	1 Introduction, 2 Program Description, Appendix PD-3 Project-Specific Analysis
	▸ Consider soil displacement, including erosion, increased turbidity, and general soil stability.	2 Program Description, 3.7 Geology, Soils & Mineral Resources, & 3.11 Hydrology and Water Quality
	▸ Address recent burn areas where potential debris flow near and adjacent to the SHS	2 Program Description, 3.7 Geology, Soils & Mineral Resources, & 3.11 Hydrology & Water Quality
	▸ CAL FIRE will interact with Caltrans District Landscape Architect staff regarding tree removal or trimming within a Scenic Highway corridor.	3.2 Aesthetics and Visual Resources
	▸ Consider cultural resources and Native American areas of special concern.	3.5 Archaeological, Historic, and Tribal Cultural resources
	▸ Avoid impacts to State Owned Historic Resources.	3.5 Archaeological, Historic, and Tribal Cultural resources
	▸ Address conflicts between CalVTP Objectives and existing laws and policies, such as emergency response protocols where HCP are established, locations subject to State Senate Resolution 1334 (Preservation of Oak Woodlands), where the Migratory Bird Act may be invoked, and how species of special concern, endangered, and threatened species may be affected	3.6 Biological Resources
	▸ Caltrans has BMPs to prevent the spread of pathogens, limit noise impacts to critical habitat areas, minimize erosion and sedimentation.	2 Program Description
	▸ Has concerns about changes in the roadside environment that may result in a less fire-resistant plant in the roadside environment, vegetation treatments that result in listed species eradication or proliferation, and more vehicle collisions with wildlife as a result of increasing grazing adjacent to roadways.	2 Program Description
Center for Biological Diversity March 1, 2019	▸ Change the direction of the VTP to create an effective, science-based plan that truly protects homes and lives from wildfire, while supporting forest and chaparral ecosystem health and the climate.	1 Introduction & 6 Alternatives
	▸ Policies focused on fuels reduction are failing. Most home ignitions are caused by embers from wind-driven fires. Logging and thinning have degraded forest ecosystems, result in net loss of carbon storage, and take resources away from solutions that keep people safe.	1 Introduction, 2 Program Description, & 6 Alternatives
	▸ 1) prioritize effective fire-safety actions for home and defensible space; 2) place appropriate restrictions on the building of new developments in fire-prone areas; work from the home outward – do not thin beyond 100′ from homes, thinning to reduce risk	1 Introduction & 6 Alternatives

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
	to infrastructure or to establish evacuation routes must focus on vegetation within and immediately adjacent to those spaces.	
	▸ Attached reports for Board to review related to implementing a home outward approach.	6 Alternatives
CDFW February 25, 2019	▸ CDFW as responsible and trustee agency	1 Introduction & 2 Program Description
	▸ Include a robust discussion of the environmental setting and baseline; identified thresholds of significance; a detailed, programmatic analysis of all potentially significant direct, reasonably foreseeable indirect, and cumulative impacts of the CalVTP; detailed discussion of feasible mitigation measures.	3.6 Biological Resources & 4 Cumulative Effects Analysis
	▸ Include alternatives to avoid, reduce, or substantially lessen related significant effects to the extent feasible.	6 Alternatives
Endangered Habitats League (1 of 2) February 20, 2019	▸ Current policies and practices are not working as intended. In chaparral and coastal sage scrub, modifying vegetation at a landscape scale distant from communities and structures is not and will not be effective in reducing fire hazard during wind driven fires. Focus on a 1) house-out approach and 2) curtail development in the WUI.	1 Introduction & 6 Alternatives
	▸ Requests the Board and CAL FIRE meeting with fire ecologists and conservationists to find common ground.	Not a CEQA issue
	▸ [in a footnote] Better define the exemptions to treatment restrictions and set reasonable distances from communities beyond which treatments would not occur.	1 Introduction, 2 Program Description, & 6 Alternatives
Endangered Habitats League (2 of 2) February 27, 2019	▸ Evaluate an alternative for scrub systems outlined by authors of the attached scientific article. Ignition prevention, wildfire suppression, land use and zoning, and home protection are all higher priorities for Southern California scrub systems.	1 Introduction & 6 Alternatives
UC Santa Cruz February 26, 2019	▸ Affirmation of intent to participate as a responsible agency under the CalVTP.	1 Introduction
UC Berkeley February 28, 2019	▸ Affirmation of intent to participate as a responsible agency under the CalVTP.	1 Introduction
Wayne Tyson March 1, 2019	▸ Asserts that fuels reduction in wildlands is not the most effective way to manage fires in California because plants will grow back.	2 Program Description & 6 Alternatives
	▸ Believes that we should instead focus on protecting homes and the WUI.	1 Introduction & 6 Alternatives
	▸ Immediate ignition detection, rapid response times, and strategic use of air and ground suppression efforts are needed.	1 Introduction & 6 Alternatives
	▸ Has concerns about prescribed burning and its effectiveness in potentially changing conditions, as well as how fuel structure, composition, and relationships are estimated.	2 Program Description
	▸ Has concerns about mastication because the chips produced may produce embers and because the fuel breaks may not stop wind-driven embers from spreading. Believes that graded firebreaks are ineffective as they sprout weeds.	1 Introduction & 2 Program Description
	▸ Believes that the most effective option is an on-site, automatic/remote-controlled fire suppression system.	6 Alternatives

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
Sweetwater Authority March 1, 2019	▶ Vegetation treatment surrounding essential infrastructure projects (e.g. dams and pump stations) should be included in the analysis and considered part of the scope of the VTP to ensure safe access to dams during fires and other emergencies.	2 Program Description & 3 Environmental Setting, Impacts & Mitigation Measures
	▶ More clearly define the proposed methods of vegetation removal, mitigation measures to prevent watershed degradation and water quality impacts, and the dimensions of the fuel reduction zones and fuel breaks.	2 Program Description & 3.11 Hydrology and Water Quality
	▶ Concerned about the erosion potential from burned slops and the resulting sedimentation of water courses. Suggests that mitigation measures be taken for this and that post-fire recovery should promote native cover crop species to prevent erosion and invasive vegetation.	2 Program Description, 3.11 Hydrology and Water Quality, & 3.6 Biological Resources
	▶ Concerned about herbicide applications and the effect on drinking water resources.	3.11 Hydrology and Water Quality
	▶ Concerned that ecological restoration projects isn t defined well enough.	2 Program Description
Nancy Summers February 11, 2019	▶ Concerned that prescribed burning in forests will exacerbate effects of climate change.	3 Environmental Setting, Impacts, & Mitigation Measures
	▶ Concerned about reducing protective vegetation around water courses that reduce water temperatures and prevent erosion.	2 Program Description & 3.11 Hydrology and Water Quality
	▶ Concerned about the potential for desertification and invasive species establishment as a result of intense erosion following treatments.	2 Program Description, 3.6 Biological Resources, 3.7 Geology, Soils, and Mineral Resources, & 3.11 Hydrology and Water Quality
	▶ Believes that research on the effects of prescribed burns near watercourses needs to be done before the project can be implemented without detrimental effects.	3.6 Biological Resources & 3.11 Hydrology and Water Quality
	▶ Concerned about burning in the wintertime because Chaparral flowers in the winter and produces the food base for many wildlife species.	3.6 Biological Resources
	▶ Concerned about the use of pesticides because it will destroy wildlife habitat and may impact water quality.	3.6 Biological Resources & 3.11 Hydrology and Water Quality
	▶ Suggests that CAL FIRE investigate further in each treatment area whether fuel reduction would actually make a significant difference.	1 Introduction & Appendix PD-3 Project-Specific Analysis
	▶ Suggests that CAL FIRE do a cost-benefit analysis of the VTP.	Not a CEQA issue
	▶ Cites a previous VMP escape and feels that there needs to be environmental oversight of CAL FIRE unit staff to prevent improper implementation. They also suggest that there needs to be a clear definition of what enforcement will look like to ensure that implementation is done properly and mitigation measures are followed.	1 Introduction & 2 Program Description
	▶ Believes that funding should be provided to sister-agencies to monitor the effects of CalVTP Projects.	Not a CEQA issue
State Lands Commission March 1, 2019	▶ Affirmation of intent to participate as a responsible agency under the CalVTP.	1 Introduction

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
	▶ Requests to be consulted in the preparation of the Draft PEIR as required by CEQA section 21153, subdivision (a), and the State CEQA Guidelines section 15086, subdivisions (a)(1) and (a)(2).	1 Introduction & 2 Program Description
	▶ Is concerned about the "programmatic level of the EIR; states that the PEIR needs to provide specific, feasible, enforceable mitigation. The PEIR should distinguish between activities and mitigations that don't require additional environmental review and activities that do require additional analysis.	3 Environmental Setting, Impacts & Mitigation Measures & Appendix PD-3 Project-Specific Analysis
	▶ Would like the Program Description to be as specific as possible to enable appropriate analysis and identification of locations under responsible agency's jurisdictions.	2 Program Description
	▶ Suggests that CNDDB and the Special Status Species Database be consulted in addition to collaborations with CDFW, USFWS, and NMFS to determine where Sensitive Species fall within the project area and how to mitigate any impacts on those species.	2 Program Description & 3.6 Biological Resources
	▶ Suggests that the PEIR specifically address whether treatment activities can occur near or within submerged lands, lakes, and waterways and any impacts to these areas.	3.11 Hydrology & Water Quality & Appendix PD-3 Project-Specific Analysis
	▶ Suggests that a GHG emissions analysis consistent with the California Global Warmings Solutions Act should be done and included in the PEIR, or that a discussion of how GHG emissions will be addressed in future individual project analysis should be included.	3.8 Greenhouse Gas Emissions
	▶ Suggests that the Board partner with interested tribes to obtain information and recommendations regarding traditional burn practices and vegetation management.	3.5 Archeological, Historical, and Tribal Cultural Resources
Stanislaus County February 15, 2019	▶ No comments at this time.	Not a CEQA related issue.
Peter St. Clair January 31, 2019	▶ Suggests that three separate EIRs are needed – one for Northern California and forested areas; one for Central California including foothills and moister chaparral communities; one for Southern California, chaparral, coastal sage scrub, and desert lands.	3.1 Approach to Environmental Analysis & 6 Alternatives
	▶ Suggests that the number of acres in the treatable landscape should be significantly reduced because vegetation treatment in largely uninhabited areas doesn't protect structures and access and believes that the focus should instead be placed on bolstering defensible space.	1 Introduction & 2 Program Description
	▶ Clearly state the alternatives to vegetation treatment and analyze them. States that the alternatives analysis in previous EIRs was not adequate. Includes as alternatives: broader enforcement of PRC 4291 and broader mandates for creation and upgrade of safe structures, new and existing; changes in local planning protocols that allow structures to be built in WUI and extension of WUI into previously undeveloped lands; "shelter in place" WUI communities.	1 Introduction & 6 Alternatives
	▶ Suggests implementation of PRC 4291 sections for safer buildings; cleared space where shrubs and trees are left in place and properly maintained to prevent blowing embers from	1 Introduction & 6 Alternatives

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
	reaching buildings is a better means of preventing loss of life and property;	
	▸ Utilize scientific information from insurance company investigations, LA county FD research, and research by the federal government such as UC Riverside Fire Lab and USGS.	1 Introduction
David Spak February 20, 2019	▸ Questions regarding the development of herbicide treatments: will invasive brush, grasses, or both be treated; who will make those decisions; who will make the applications.	2 Program Description, 3.10 Hazardous Materials, Public Health & Safety, & Appendix PD-3 Project-Specific Analysis
	▸ Offered assistance with extended preemergence options (Esplanade 200SC and Esplanade F).	Not a CEQA related issue
Rancho Simi Recreation and Park District February 8, 2019	▸ No comments at this time.	Not a CEQA related issue
Northcoast Environmental Center February 28, 2019	▸ Support all fuel treatment methods except the use of chemical herbicides and suggest that creating a stable workforce of trained workers for creating and maintaining roadside shaded fuel breaks is the best long-term solution.	2 Program Description & 3.10 Hazardous Materials, Public Health & Safety
Native American Heritage Commission February 14, 2019	▸ Outlines the rules and regulations related to tribal consultation for CEQA documents.	3.5 Archeological, Historical, and Tribal Cultural Resources
	▸ Outlines recommended actions for avoidance, preservation, or mitigation of tribal cultural resources	3.5 Archeological, Historical, and Tribal Cultural Resources
Metro Water District of Southern California February 27, 2019	▸ Requests to be kept informed of the progress of the EIR as it may impact their current fire and vegetation management practices.	1 Introduction
Betsey Landis March 1, 2019	▸ Is concerned that conditions are too erratic now for prescribed burning to be a safe and effective form of treatment.	2 Program Description, 3.4 Air Quality, & 3.17 Wildfire
	▸ The shrublands of Southern California have been too frequently burned and this, among other impacts, is affecting the biodiversity and ecosystem health of these areas.	3.6 Biological Resources
	▸ Laws to govern the disposal of organic waste are being developed and they will preclude debris from prescribed fires from being taken to landfills; they must be taken to composting or other businesses for processing and if they are infested they must go to a California Food & Ag center.	2 Program Description & 3.16 Public Services, Utilities & Service Systems
	▸ Recommends removing prescribed burning from the CalVTP.	6 Alternatives
	▸ No treatment should be done without a thorough understanding of native plants being treated and how to help foster biodiversity after burns.	2 Program Description & 3.6 Biological Resources
Susan Krzywicki February 26, 2019	▸ Ms. Krzywicki cites comments from the Chaparral Institute's letters of 2016 and 2017.	See responses to Chaparral Institute letter above.
	▸ Please look at better spatial data, and consider that wildfires are not the result of the plants, but of the humans. Solutions should be based on the restraints of humans, not the destruction of the very species that belong here - and need to be here in order to keep any semblance of a healthy ecosystem.	1 Introduction & 6 Alternatives

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
Peter Gruchawka February 25, 2019	▸ Concerned about health effects of prescribed fire and the "accelerants" being used. Concerned about air pollutants in smoke.	2 Program Description, 3.4 Air Quality, 3.10 Hazardous Materials, Public Health & Safety
.	▸ Concerned about the impacts of accelerants on waterways and watersheds.	2 Program Description, 3.6 Biological Resources, & 3.11 Hydrology and Water Quality
	▸ Suggests that the science behind the VMP is outdated and that the VMP should be discontinued and studied for adverse effects on the environment.	2 Program Description & 3 Environmental Setting, Impact, & Mitigation Measures
	▸ Concerned about how property lines will be determined and what may happen to endangered and threatened species if neighboring parcels are protected areas for these species.	2 Program Description & 3.6 Biological Resources
	▸ Concerned about project effects on air and water quality.	2 Program Description, 3.4 Air Quality, & 3.11 Hydrology & Water Quality
	▸ Concerned about project implications for climate change.	3.8 Greenhouse Gas Emissions
	▸ Concerned about the cumulative effects of all vegetation treatment programs across the state that occur in different agencies and suggests that those effects should be studied including impacts on wildlife, plants, water and air quality, visual and aesthetic resources, recreation, soils, and invasive weed spread.	4 Cumulative Effects Analysis
	▸ Concerned about the effects of the CalVTP on insect populations.	3.6 Biological Resources
	▸ Concerned about the effects of prescribed burns on wildlife and the 6th mass extinction.	3.6 Biological Resources
	▸ Concerned about transparency of projects and public ability to view adequate records of vegetation treatment.	1 Introduction
	▸ The PEIR should find a determination of significant impacts due to its size and proposed methods.	5.1 Significant and Unavoidable Impacts
	▸ Is concerned about improper implementation by crews and believes that this possibility should be thoroughly considered and the impacts of this outcome documented.	Not a CEQA issue
	▸ The project should include and review the following alternatives: a scaled down version; staging fire crews proactively instead of responding reactively; assisting PG&E with vegetation clearance around power lines instead of the currently proposed vegetation treatment.	1 Introduction & 6 Alternatives
	▸ Citizens have the right to have individual projects evaluated under CEQA.	1 Introduction, 2 Program Description, & Appendix PD-3 Project-Specific Analysis
	▸ Include methodology for monitoring compliance with mitigation measures on individual projects.	3 Environmental Setting, Effects, and Mitigation Measures & Appendix PD-3 Project Specific Analysis
Audrey Fusco February 7, 2019	▸ Concerned about destruction of habitat from prescribed burns and pesticide applications.	2 Program Description & 3.6 Biological Resources

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
	▸ Proposes a better land management plan in lieu of the CalVTP that includes native vegetation.	1 Introduction & 6 Alternatives
Jerry Fisher March 1, 2019	▸ Proposes an alternative method of fire prevention – No ignition" system during Santa Ana Winds, volunteer fire fighters stationed at strategic locations, camera equipment, and road closures.	6 Alternatives
Anne Fege February 28, 2019	▸ Greater focus needs to be placed on structural hardiness for reducing flammability, improved alerts and evacuation procedures, plans for suppression, and fuel reduction to facilitate suppression actions.	1 Introduction & 6 Alternatives
	▸ Approve of the use of fuel breaks and defensible space measures to control fires in the WUI.	2 Project Description
	▸ Suggests that homes are the most flammable substance and that defensible space of 100ft is the best tool to combat loss of life and property. More clearing is detrimental as it allows the establishment of flammable weeds and erosion.	1 Introduction & 6 Alternatives
	▸ Concerned about scientific support for the treatment methods and alternatives considered.	2 Program Description & 6 Alternatives
	▸ Fuel breaks should be selected from Unit Fire Plans and Community Wildfire Protection Plans.	1 Introduction & 2 Program Description
	▸ Engaging the public is an important piece of developing the PEIR.	1 Introduction
	▸ CAL FIRE should maintain an online list of proposed, current, and completed projects in each unit with project plans and schedule public meetings and comments.	1 Introduction
	▸ Climate change impacts on the growth of vegetation and the response of vegetation to prescribed fire must be considered.	2 Program Description, 3.8 Greenhouse Gas Emissions, & 3.17 Wildfire
Farm Bureau February 28, 2019	▸ Include grazing in the CalVTP as a fuels reduction tool.	2 Program Description
	▸ There are significant fuel loads on lands managed by CDFW and the California State Parks that require annual treatment. These lands were actively grazed in the past and grazing on these lands should be included as a covered activity under the CalVTP.	2 Program Description
	▸ Suggests that the Board investigate both the positive and negative impacts on water quality and quantity – increased by reducing the amount of vegetation taking up water, decreased by the risk of erosion.	3.11 Hydrology and Water Quality
	▸ Believe that the CalVTP activities will generate a net decrease in greenhouse gas emissions by preventing large, severe wildfires and decomposition of woody biomass post-fire.	3.8 Greenhouse Gas Emissions
Sonoma State University March 6, 2019	▸ Will there be funding available to support projects?	Not a CEQA issue
	▸ What is the treatable landscape area specific to Sonoma State University?	2 Program Description
	▸ What are the recommendations of treatment types and activities specific to Sonoma State University properties?	2 Program Description

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
	▶ Will there be an inspection sheet to obtain State Fire Marshal approval and to record work carried out?	2 Program Description & Appendix PD-3 Project-Specific Analysis
CSU San Bernardino February 27, 2019	▶ Notify and coordinate with CSU San Bernardino if herbicide application is necessary on or around the campus or of plans to reduce vegetation near the campus.	2 Program Description, 3.10 Hazardous Materials, Public Health & Safety, & Appendix PD-3 Project-Specific Analysis
County of Santa Clara Parks and Recreation February 28, 2019	▶ Request that the County of Santa Clara Parks and Recreation Department be included in the PEIR section G.2 and table G.2.1 and included in the project scope as a treatable recreational area.	1 Introduction & 3.14 Recreation
County of Santa Barbara Planning and Development Department February 25, 2019	▶ Ensure that fuel treatments in Santa Barbara County are tailored to the characteristics of the vegetation communities that occur, the spatial distribution of developed communities, and the changing conditions that can worsen fires.	2 Program Description & Appendix PD-3 Project-Specific Analysis
	▶ The PEIR should account for differences in fire frequency regimes in different vegetation types – particularly for chaparral and coastal sage scrub – and tailor the evaluation of impacts and mitigation appropriately.	2 Program Description & 3.6 Biological Resources
Santa Barbara Fire Department February 25, 2019	▶ CalVTP would help the Fire Department be more efficient with existing programs by aiding in CEQA compliance.	1 Introduction
	▶ Because Santa Barbara county is the transition from Southern to Central California, it has unique vegetation and weather patterns and they suggest that the PEIR address location conditions, especially the impact of previous fires limiting subsequent fire spread.	2 Program Description & 3.17 Wildfire
	▶ Prescribed fire in sage and grass/oak woodland vegetation, the impact of traditional herbivory (especially when combined with prescribed fire), and the efficacy of Santa Barbara's local fuel breaks should be included in the PEIR.	2 Program Description & 3.6 Biological Resources
County of Santa Barbara Executive March 1, 2019	▶ Comments submitted through the Planning and Development and Fire Department	Not a CEQA related issue
San Diego County Department of Environmental Health Local Enforcement Agency March 1, 2019	▶ Waste generated as a result of treatment would be considered feedstock for organic processing operations and would need permitting and inspection by LEA. They are also subject to solid waste regulatory standards.	2 Program Description & 3.16 Public Services, Utilities and Service Systems
	▶ Waste should be handled using Title 14 CCR Chapter 3.1. Include a description and analysis for proposed management of generated organic materials from these treatments.	2 Program Description & 3.16 Public Services, Utilities and Service Systems
	▶ How would infected vegetation such as trees infested with bark beetles be managed/processed to prevent further spread of pests?	2 Program Description & 3.6 Biological Resources
	▶ Would like to be given future updates on this PEIR.	Not a CEQA related issue
San Diego County Department of Parks and Recreation	▶ Would like to receive future updates. ▶ Coordinate closely with local jurisdictions and land managers to ensure that all potential treatments are covered under the PEIR.	Not a CEQA related issue 1 Introduction

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
March 1, 2019		
City of Santa Cruz March 1, 2019	▸ Planning Dept.: Cooperate with the City of Santa Cruz when developing work plans near city limits and the PEIR should consider impacts from herbicide application, controlled burns, and vegetation removal on water supply, storm water runoff, water quality, air quality, and sensitive or protected habitats and species.	1 Introduction, 3.4 Air Quality, 3.6 Biological Resources, 3.10 Hazardous Materials, Public Health & Safety, & 3.11 Hydrology and Water Quality
	▸ Planning Dept.: No SRA within city limits, but some areas in the city's Sphere of Influence do fall in SRA and those areas area all sensitive or highly sensitive for archeological resources so they ask that potential impacts be thoroughly investigated.	3.5 Archeological, Historic, and Tribal Cultural Resources
	▸ Planning Dept.: Three creeks are in the treatable area and the PEIR should evaluate any impacts to these creeks.	2 Program Description & 3.11 Hydrology and Water Quality
	▸ Planning Dept.: some areas in the treatable area are at risk for liquefaction so any impacts on these areas should be thoroughly covered in the PEIR.	3.7 Geology, Soils, and Mineral Resources
	▸ Fire Dept.: Supports the program.	Not a CEQA related issue
	▸ City Urban Forester: Address how local input will be considered when developing plans for areas in the WUI. Any treatments should be consistent with the city's WUI policy, the Heritage Tree Ordinance, and the Integrated Pest Management policy.	1 Introduction, 2 Program Description, & Appendix PD-3 Project-Specific Analysis
	▸ City Urban Forester: No brush, debris, or fuel load should be left on city property.	2 Program Description
	▸ City Urban Forester: Restoration projects performed on city property should be coordinated with city staff and have a one-year maintenance period.	2 Program Description
	▸ City Urban Forester: Erosion best management practices should be in place following treatments and should be monitored by the state for one-year.	2 Program Description & 3.7 Geology, Soils, and Mineral Resources
	▸ No work should impact city staff or city budgets, and press releases and public outreach should occur early and at the expense of the state.	Not a CEQA related issue
City of Santa Barbara Fire Department February 28, 2019	▸ The City is potentially a responsible agency.	1 Introduction
	▸ Mitigation recommendations will be most useful if they are specific to local areas and ecosystems.	3 Environmental Setting, Impacts, & Mitigation Measures
	▸ Impact analysis should follow CEQA guidelines to identify related environmental regulations and policies and any inconsistencies between them.	3 Environmental Setting, Impacts, & Mitigation Measures
	▸ Address any permitting issues with other state and local agencies to enable the stronger vegetation treatment activities including treatments along creeks, air quality policies, greenhouse gas directives, and policies for limiting development in the WUI.	1 Introduction, 2 Program Description, 3.4 Air Quality, 3.8 Greenhouse Gas Emissions, & 6 Alternatives

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
City of San Diego Planning Department March 1, 2019	▶ Much of the city is located downstream from treatable landscape and water quality and storm water drainage impacts are their main concern.	2 Program Description & 3.11 Hydrology & Water Quality
	▶ The scope of the analysis should include preventing erosion and siltation from vegetation removal.	2 Program Description, 3.7 Geology, Soils, & Mineral Resources, & 3.11 Hydrology & Water Quality
	▶ Address impacts that could be associated with application of herbicides.	2 Program Description, 3.10 Hazardous Materials, Public Health & Safety, & 3.11 Hydrology & Water Quality
	▶ Address potential effects on downstream flows, drainage facilities, and flooding.	3.11 Hydrology and Water Quality
	▶ Address potential effects if heavy equipment is used to remove vegetation.	3 Environmental Setting, Impacts, and Mitigation Measures
	▶ Address potential downstream effects of herbivore grazing programs.	3.11 Hydrology and Water Quality
California Department of Parks and Recreation March 11, 2019	▶ DPR has internal policies that prohibit the construction and maintenance of firebreaks, fuel breaks, and other fuel modification zones under park lands.	2 Program Description
	▶ Include a discussion of potential impacts on sensitive and listed species, especially on DPR lands.	2 Program Description & 3.6 Biological Resources
	▶ Include a discussion of how the CalVTP will prevent the spread of invasives on DPR lands.	2 Program Description & 3.6 Biological Resources
	▶ Address soil erosion, sedimentation, and impacts on water quality from the creation of fuel breaks.	2 Program Description, 3.7 Geology, Soils, & Mineral Resources, & 3.11 Hydrology and Water Quality
	▶ Include conditions to conduct cultural resource surveys and address any mitigation; PEIR should specify the appropriate project-level entity who should complete PRC 5024 documentation.	2 Program Description & 3.5 Archeological, Historic, & Tribal Cultural Resources
	▶ Address impacts to recreation and aesthetics.	2 Program Description, 3.2 Aesthetics & Visual Resources, & 3.14 Recreation
	▶ The level of analysis in the PEIR should be sufficiently robust to support preparation of a project-level compliance through a NOE.	2 Program Description, 3 Environmental Setting, Impacts, & Mitigation Measures, & Appendix PD-3 Project-Specific Analysis
	▶ Requests to be included in scoping of projects that include DPR land and DPR expects to maintain control over activities on its land regardless of who initiates project level review.	2 Program Description & Appendix PD-3 Project-Specific Analysis
	▶ For fuel breaks that include or are adjacent to DPR lands, the entity responsible for long-term maintenance and associated funding should be identified prior to approval.	1 Introduction, 2 Program Description, & Appendix PD-3 Project-Specific Analysis
	▶ Utilize DPR staff who currently carry out fuel reduction on DPR lands in CalVTP project-specific discussion, design, analysis, and implementation.	1 Introductions

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
California Coastal Commission March 8, 2019	▸ Explicitly state the requirement to obtain a CDP for development in the coastal zone, and the need to be consistent with the Coastal Act and/or applicable LCP.	2 Program Description
	▸ Describe the Coastal Act's Chapter 3 policies that would apply to the subject development.v	3 Environmental Setting, Impacts, & Mitigation Measures
	▸ Recommend early coordination between the project applicant and the Coastal Commission and/or applicable local gov planning departments.	1 Introduction & 2 Program Description
	▸ More clearly and specifically describe project objectives.	2 Program Description
	▸ Include as much detailed information as possible about the location and characteristics of potential sensitive species and habitats, map known rare plant and animal populations and rare habitats.	3.6 Biological Resources
	▸ Ensure that within the scope projects are consistent with the Coastal Act and not just CEQA or other environmental laws; certain coastal resources might fall within the category requiring site-specific biological reviews.	Appendix PD-3 Project-Specific Analysis
	▸ Include process for evaluating effectiveness of each vegetation treatment project, including its methods.	Appendix PD-3 Project-Specific Analysis
	▸ Examine whether the use of methods with significant impacts to coastal resources are effective relative to other methods which have fewer impacts, particularly in relation to any recent scientific information. Recent study indicates fuel breaks can diminish the effectiveness of defensible space by providing a clear path for firebrands to come in contact with homes (Koo et al 2012).	3 Environmental Setting, Impacts, & Mitigation Measures
	▸ A section on fire history, including background information on frequency and footprints of wildfires throughout the state in sensitive habitats may aid in evaluating how effective a VTP activity may be	2 Program Description & 3.17 Wildfire
	▸ Ecological Restoration projects should be examined more carefully as a potential treatment option within the WUI	2 Program Description
	▸ Evaluate which restoration activities might be beneficial in each habitat type included in the potential treatable areas, and it should describe with the potential benefits are	3.6 Biological Resources
	▸ Evaluate alternatives that reduce the treatable land area and/or actual treated land in the coastal zone, especially within sensitive habitats; look more precisely at identifying the area likely to be treated	6 Alternatives
	▸ Evaluate an alternative considering other means of achieving fire safety beyond treating landscapes	6 Alternatives
	▸ The proposed project, as well as other potential alternatives, including the reduced treatable area alternative, also should be evaluated for their effectiveness at reaching project objectives through such alternate means	6 Alternatives
	▸ Evaluate coastal resources explicitly on their own regardless of where they fall in the Appendix G topic areas	3 Environmental Setting, Impacts, & Mitigation Measures

Table A-1 NOP Comment Summary

Commenter/Date	Summary	Addressed in Draft EIR Section
	▸ Include a rubric that outlines the criteria for which a particular approach would be appropriate including the needs/goals of a project, constraints, expertise needed, suitable locations, ability of BMPs to avoid impacts to biological resources, and any necessary mitigation measures to reduce anticipated impacts	2 Program Description & Appendix PD-3 Project-Specific Analysis
	Verbal Comments Received at Public Scoping Meeting on February 19, 2019	
Dan Silver (Endangered Habitats League)	Mr. Silver read aloud the letter sent from the Endangered Habitats League.	See "Endangered Habitats League (1 of 2)" content summary

Hannigan, Edith@BOF

From: joan bockman <joanbockman@sbcglobal.net>
Sent: Friday, March 1, 2019 10:18 AM
To: CALVTP@BOF
Subject: Re: Notice of Preparation, VTP PEIR

Attn: Edith Hannigan, Land Use Planning Program Manager

Please support the 24 Recommendations listed below from the Chaparral Institute that is supported by many other groups. Other approaches do not result in sustainable solutions. Please read the entire letter from Rick Halsey to understand the detail: http://www.californiachaparral.com/images/VTP_Notice_of_Prep_2019_FINAL_w_AP.pdf

Regards,
Joan Bockman

24 Recommendations
1. Shift the focus to saving lives, property, and natural habitats rather than expecting unrealistically to be able to control wind-driven wildfires during severe weather conditions. These are two different goals with two radically different solutions. This new focus can help existing communities withstand wind-driven wildfires, improve alerts, evacuation procedures, and FireSafe programs, instead of continually pouring resources into modifying a natural environment that continually grows back and will always be subject to wildfire (Moritz et al. 2014).
2. Create separate, regional Programmatic EIRs. California's vegetation communities and fire regimes are too diverse to be considered in one document. This has been a fundamental flaw of previous draft EIRs. At the very minimum, there should be separate EIRs for: northern 6 California's conifer forests, the western slope of the central/southern Sierra Nevada, central coastal California including foothills and somewhat moister chaparral communities, and southern California's chaparral, coastal sage scrub and desert lands. This regional approach can avoid the considerable CEQA compliance problems that are evident in the map "Treatable Landscape."
3. Science-based defensible space. Detail defensible space guidelines so treatment and distances are based on science and recognize the physical impact of bare ground on ember movement, increased flammability due to the spread of invasive weeds, and increased erosion and sediment movement in watersheds. The research has clearly indicated that defensible space distances beyond 100 feet can be counterproductive. The present definition includes the term clearing, implying that defensible space should be clear of all vegetation. Creating large areas of clearance with little or no vegetation creates a "bowling alley" for embers. Without the interference of thinned, lightly irrigated vegetation, the house becomes the perfect ember catcher. In addition, when a fire front hits a bare fuel break or clearance area, a shower of embers is often released (Koo et al. 2012, Gould et al. 2009).
4. Require that, as part of any WUI vegetation treatment project, the plans include structure and community retrofits as a significant portion of the effort. This approach has been endorsed by a strong consensus of fire scientists and is illustrated well in this National Fire Protection Association video with Dr. Jack Cohen: (https://youtu.be/vL_syp1ZScM).
5. Make sure that Cal Fire has a well-trained adequately staffed Defensible Space Inspection Program that focuses on identification of vulnerabilities of the home structure and then working outward to zones 1 and 2. The program should emphasize on-site public education. Quality of inspections and information conveyed is much more important than quantity of inspections performed. The program should, at minimum, match the length of the fire season. Urge local jurisdictions to adopt this model.
6. Science-based defensible space compliant plant list. Presently, plant lists for 100-foot defensible space zones provided by fire agencies are haphazard and unsupported by adequate research. The State Fire Marshal and the

Board of Forestry, as part of the WUI vegetation management component of the VTP, should co-develop a comprehensive guidance list of approved plants within the defensible space zone. This list could eventually be adopted into Title 14 of the California Code of Regulations, and retail nurseries could use this list to create clear tag markers that specify plants as "Defensible Space Compliant."

7. Train Officials, Fire Marshals, Defensible Space Inspectors. There is no systematic training course or certification that teaches how to apply California Building Code (CBC) WUI standards at the building inspector level or a process that teaches how to apply state or local defensible space standards at the home inspector level. Building experts, fire, insurance, and private inspectors need to be trained on these unique processes. The draft EIR should set the framework to develop such a program as a mitigation process.

8. Help with grants and retrofits. Develop a plan to assist Fire Safe Councils in acquiring FEMA pre-disaster grants to assist homeowners in retrofitting their homes to reduce their flammability with known safety features (e.g., exterior sprinklers, ember-resistant vents, 7 replacing flammable roofing and siding with fire-resistant Class A material, etc.). The effectiveness of exterior sprinklers was proved during the 2007 wind-driven Ham Lake fire in Cook County, Minn., where they had been installed on 188 properties. All of those properties survived; more than 100 neighboring properties didn't. Federal Emergency Management Agency (FEMA) hazard mitigation grants had covered the majority of the cost of the sprinklers.

9. Reassess the efficacy of back country fuel modifications.

10. Recognize that all chaparral is potentially threatened by excessive fire frequencies. Chaparral in the central and northern part of the state will likely be threatened by higher fire frequencies as they are in the south as the climate continues to change. There is no ecological rationale for fuel treatments in shrub dominated ecosystems in northern or southern California as claimed in previous draft EIRs.

11. Account for biodiversity in chaparral. Incorporate into the cumulative impact analysis how biodiversity may be impacted by the Program. See Halsey and Keeley (2016).

12. Detail impacts. Examine possible direct and cumulative impacts of the Program and develop legally adequate mitigations for those impacts as required by CEQA. Previous drafts have not done this.

13. Consultation on chaparral treatments. All projects involving old-growth chaparral (in excess of 75 years from the last fire) should be developed in consultation and in agreement with the California Native Plant Society as was previously indicated in the prior VTP draft.

14. Create fire risk maps. Currently, Cal Fire Hazard Maps do not depict risk. They only estimate hazard which is the probability of a wildfire occurring. This compromises the efficacy of the final VTP. Risk maps can depict more accurately the consequences of a wildfire. These are needed for every parcel in any type of fire hazard zone. These assessments will need to be done at the local level, requiring a standard risk model.

15. Reduce human-caused ignitions. Since nearly all of California's devasting wildfires are human-caused, the draft VTP should develop plans to reduce such ignitions. One of the objectives should be to help develop a statewide action plan, in collaboration with land management agencies, Cal Trans (since many ignitions occur along roads), Cal Fire, and public utilities (since many of the largest fires have been caused by electrical transmission lines and equipment), to reduce the potential for human-caused ignitions. Cal Fire Defensible Space Inspectors should be in the field and on patrol during peak burning periods of hot weather that increase the risk of rapidly spreading ignitions.

16. Comprehensive evacuation plans. Promote the development of clear evacuation/response plans based on an extreme, wind-driven wildfire event. Current plans are often based on events the current system is capable of responding to, not events that have the potential of causing significant loss of life and property.

17. Climate Action is Fire Prevention. Cal Fire should set the example by maximizing all of its stations for PV solar production with on-site storage (flywheel or batteries) to make them 8 independent and operational during grid power outages. Eighty percent of employee and public parking spaces should be equipped with free Level 2 vehicle chargers to incentivize a transition to electric vehicles and offset GHG emissions of emergency vehicles. Furthermore, on a phased basis as feasible, all stations should be hardened to reduce energy consumption and resist wildfires consistent with current building code requirements for Very High fire Hazard Severity Zones.

18. Proper account of carbon sequestration. Recalculate the potential increase in atmospheric carbon from the proposed program to account for the loss of below ground carbon sequestration in healthy chaparral

communities due fuel treatments. The assumption used in the previous draft EIR that the proposed program will have no significant impact on atmospheric carbon was based on incomplete calculations.

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20. Maintain consistency and research quality. Eliminate contradictions, errors in citations, and inconsistencies throughout the draft EIR before its release. Conclusions in an EIR need to be supported by research, not by employing anecdotal stories as with previous draft EIRs.

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22. Plan for the future. Base project need, selection, and treatment approach, on projected climate change scenarios, not past, anecdotal experiences. Recognize that we need more vegetation/native habitat over broad landscapes storing carbon to slow climate breakdown, not less.

23. Collaboration. Instead of creating draft VTP EIRs within the confines of the bureaucracy, the Board should engage in a collaborative process in which all interested parties are involved, including fire science and environmental communities. Otherwise, time and resources will be wasted in defending and challenging the document.

24. Peer-review. The draft EIRs need to be submitted to an independent, science-based, peerreview process prior to its public release for public comment. Such a review was required by the state legislature for the 2012 draft EIR. The Board should commit to following the recommendations offered by the independent review committee in both the EIRs' supporting background information and proposed action plans.

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Land Use Planning Program Manager
PO Box 944246
Sacramento, CA 94244-2460
Email: CalVTP@bof.ca.gov

Re: Notice of Preparation, VTP PEIR February 25, 2019

Dear Members of the Board,

Thank you for revisiting the idea of revamping the Vegetation Treatment Program (VTP) and creating a new plan that has the potential of being a model, collaborative effort.

With this letter, we offer 24 recommendations that will help guide you in shaping a fire risk reduction effort with the achievable goal of preventing wildfire catastrophes. As renowned US Forest Service fire scientist Jack Cohen has been demonstrating with his research for decades, **while large wildfires are inevitable, the destruction of our communities is not.**

At the outset, however, the Board must reject the fuel-centric approach as described in the Notice of Preparation (NOP). With this, the 6th attempt since 2005 to produce a wildfire risk reduction plan for the state, the NOP is focusing again on the scientifically rejected notion that "the treatment of fire fuel" can "prevent wildfire" in State Responsibility Areas (SRA). The NOP's prevention claim is based on the 95 percentile fires that can be controlled by traditional wildland firefighting strategies. It ignores, however, the wind-driven fires that cause nearly all the devastation to our communities.

We also respectfully challenge the Board to question the NOP's fundamental assumption that "decades of fire suppression" is directly responsible for the state's most catastrophic wildfires. We are unaware of any research that directly ties fuel accumulation due to past fire suppression to the loss of life and property in any of the state's most devastating wildfires.

As evidenced by the 2017 and 2018 wildfires, the approach exemplified by the NOP is failing us. The focus must be on the wind-driven, fine-fueled, ember-generating fires that cause nearly all the loss of life and property. Otherwise, the next **Vegetation Treatment Program will likely**

make the landscape more flammable, not less, by increasing the non-native grass component (Syphard and Keeley 2015) and intensive forest management (Zald and Dunn 2018).

Ignoring where the risk is greatest

Despite overwhelming evidence indicating that fuel accumulation from past fire suppression applies only to some forested landscapes, the NOP claims the impacts of fire suppression is a key factor in creating fire risk to communities throughout California. **This is false and is based on a forest-centric focus** that does not recognize where the majority of the fire risk occurs for most Californians. Even the previous VTP Programmatic EIR partially recognized this distinction. **Decades of fire suppression had nothing to do with the most devastating wildfires** the NOP cite**s** as providing the rationale for a new and expanded VTP.

There are approximately 15 million acres of mixed conifer/ponderosa pine forests in California that may have missed several fire return intervals due to past fire suppression. Most of these forests are far from the communities most impacted by the 2017 and 2018 wildfires. Yet the NOP cites these forests as the main rationale for the program's necessity. In contrast, the vast majority of the population at risk of wildfire live in and around approximately 12 million acres of native shrubland habitats, habitats that have suffered *too much fire* and as a consequence are at risk of type conversion to more flammable, weedy grasslands. **Rather than suffering from decades of fire suppression, native shrublands have suffered from too much fire.** This too was recognized by the previous draft EIR.

So why is the NOP reverting back to previously erroneous assumptions about past fire suppression, assumptions that have been criticized by the Joint Fire Science Consortium, the National Park Service, the California Department of Fish and Wildlife, and many environmental organizations?

Ignoring embers

Despite overwhelming evidence that embers, flying more than a mile ahead of the fire front, are responsible for igniting communities far from wildland areas, the NOP is focusing on the same vegetation treatment strategies that do next to nothing to protect us from wind-driven wildfires. Coffey Park during the Tubbs Fire presents a classic example - embers blew over at least a mile of suburban development and vacant land, in addition to 300 feet of roadway (Highway 101), before igniting the community. This story has been repeated over and over again since the 2003 Cedar Fire in San Diego County. To justify the distant treatments of heavy fuels, some have claimed such treatments will significantly reduce the volume of embers hitting communities. Such a claim is unsupported by research and highly questionable, especially considering the production of embers during fast moving grass fires.

Ignoring flammable, fine fuels

Despite overwhelming evidence that significant portions of the Tubbs, Thomas, and Woolsey fires were fueled by non-native, invasive grasses, fuels that typically increase after fuel treatments, the NOP appears to focus primarily on the larger fuels that create the dramatic, large flames that are rarely responsible for the destruction of communities. Fire after fire has proven that few homes burn because of direct contact with flames from wildland fuels. Homes ignite by wind-driven embers generated by small diameter fuels often burning miles away.

The importance of small diameter fuels, and why habitat clearance projects fail to protect Californians from wind-driven wildfire, was demonstrated during the Camp Fire, a fire the NOP highlights as justification for even larger habitat clearance projects.

One of the primary reasons the Camp Fire was so destructive was the condition of approximately 30,000 acres it burned through on the way to the town of Paradise. The terrain had been burned ten years before, had been salvaged logged, and contained numerous tree plantations (Fig. 5). This was not the landscape the NOP describes as suffering "decades of fire suppression." In fact, one of the reasons the fire moved so fast was because there wasn't a dense forest to slow down the fire's wind-driven forward movement.

A similar situation occurred when the 2013 Silver Fire in San Bernardino County burned through the 2006 Esperanza Fire scar (forty structures were destroyed in 2013, ignited by embers created by young fuels). According to assumptions underlying the NOP, a destructive fire driven by seven-year-old fuels is not supposed to happen.

Ignoring science on how best to protect communities
Despite overwhelming evidence from decades of research by Jack Cohen that shows reducing community flammability is the most effective way to protect lives and property, the NOP *never mentions the subject once*. We can stop wildfire disasters in our communities, but the VTP must be based on the most basic scientific principal of reducing wildfire risk - **the wildfire problem is a home ignition problem, not a wildfire control problem.**

Misguided ecological restoration
As with previous draft EIRs, the current NOP makes a sweeping statement about "restoring ecosystem processes" without acknowledging that such treatments only apply to limited areas, specifically some lower elevation, mixed conifer forests. Although the last draft EIR discussed this issue, the action portion of the draft contradicted the text by presenting maps of potential "ecological restoration" areas that did not need to be restored. The NOP appears to be on the path of repeating the same contradiction.

Utilizing anecdotal evidence rather than scientific research
Yes, there are a considerable number of examples of fires stopping or being controlled at previous fire perimeters and fuel treatments. Examples of such events were cited in previous draft EIRs. However, when examined scientifically, where a full set of data are examined, other variables are typically involved, particularly changes in weather. This is especially true when it comes to wind-driven fires, the fires the EIR must address. Typically, the most destructive wildfires only stop when the weather cooperates.

The Board, Cal Fire, and the State of California must reexamine the fundamental assumptions about wildland fire to enable it to better protect Californians. It needs to be recognized that the fire threat is not miles away in forests, but *within* heavily populated suburban environments. We must accept the fact that like earthquakes, we cannot stop wildfires, but we can certainly limit the damage they cause. Unless wildland firefighting assumptions are reexamined and changed to adjust to our changing environment, the types of wildfire disasters we have faced since the 2003 Cedar Fire will continue. In fact, the NOP's approach will likely increase the flammability of the landscape by:

1. Focusing on forested areas far from where California's most devastating fires occur (Fig.1).
2. Facilitating the movement of embers toward homes through unwise clearance projects (Fig. 2).
3. Increasing the amount of flashy fuels (non-native grasses and weeds) (Fig. 3).
4. Increasing fire rate of spread by opening up forests (Figs. 4 and 5).
5. Failing to address the most dangerous accumulation of dead fuels – homes (Fig. 6).

Homes burn because they are flammable and are built on fire-prone landscapes. Most structures ignite during wildfires **because of flying embers**. This is why so many families have lost their homes even though they have complied with defensible space regulations – their homes were still vulnerable to embers. This is why communities far from wildland areas have been destroyed during wildfire and why entire neighborhoods have burned to the ground while the trees around them have not (Fig 7). This is why fuel breaks, twelve-lane highways, and even large bodies of water fail to protect our homes during wind-driven wildfires.

We understand that logging, clearing habitat, and fighting wildland fire are how the Board and Cal Fire have traditionally approached fire protection. We understand that addressing the actual causes of community devastation during wildfires - flammable buildings, poor evacuation plans, homes in known fire corridors – do not reflect the Board's or Cal Fire's traditional roles. **But if the State of California wants to truly reduce wildfire risk, it must move away from its traditional paradigm of focusing on clearing habitat and logging forests far from most communities at risk.**

We are offering the 24 recommendations below to help the Board create a more successful and collaborative wildfire risk reduction plan. We have also attached the key comment letters dating back to 2005 submitted by the California Chaparral Institute on previous VTP draft EIRs (Appendix A). We are doing so to help the Board avoid pitfalls of previous efforts and provide the research that contradicts the NOP's basic assumptions. Our recent letter concerning wildfires to Governor Newsom has been included as well (Appendix B).

Sincerely,

Richard W. Halsey
Director
California Chaparral Institute

Kathryn Phillips
Director
Sierra Club California

Chad Hanson
Director
John Muir Project

Dan Silver
Executive Director
Endangered Habitats League

Brian Nowicki
CA Climate Change Director
Center for Biological Diversity

Joaquín Aganza
President
Friends of Hellhole Canyon

David Hogan
Director
The Chaparral Lands Conservancy

Travis Longcore
Conservation Chair
Los Angeles Audbon

Dan McCarter
President
Urban Creeks Council

Ara Marderosian
Executive Director
Sequoia ForestKeeper

Dennis Odion
Earth Research Institute
University of California, Santa Barbara

Catherine Rich
Executive Officer
The Urban Wildlands Group

Michael Wellborn
President
Friends of Harbors, Beaches and Parks

Jim Wells
Former Chair
S. Oregon Prescribed Fire Network

Rob DiPerna
Forest & Wildlife Advocate
Environmental Protection Information Center

Bryant Baker
Conservation Chair
Los Padres ForestWatch

Marily Woodhouse
Director
Battle Creek Alliance

Attachments
1. Appendix A: Previous CCI comment letters with cited references
2. Appendix B: Letter to Governor Newsom (January 11, 2019)
3. Appendix C: Cited papers in the 24 recommendations

24 Recommendations

1. Shift the focus to saving lives, property, and natural habitats rather than expecting unrealistically to be able to control wind-driven wildfires during severe weather conditions. These are two different goals with two radically different solutions. This new focus can help existing communities withstand wind-driven wildfires, improve alerts, evacuation procedures, and FireSafe programs, instead of continually pouring resources into modifying a natural environment that continually grows back and will always be subject to wildfire (Moritz et al. 2014).

2. Create separate, regional Programmatic EIRs. California's vegetation communities and fire regimes are too diverse to be considered in one document. This has been a fundamental flaw of previous draft EIRs. At the very minimum, there should be separate EIRs for: northern

California's conifer forests, the western slope of the central/southern Sierra Nevada, central coastal California including foothills and somewhat moister chaparral communities, and southern California's chaparral, coastal sage scrub and desert lands. This regional approach can avoid the considerable CEQA compliance problems that are evident in the map "Treatable Landscape."

3. Science-based defensible space. Detail defensible space guidelines so treatment and distances are based on science and recognize the physical impact of bare ground on ember movement, increased flammability due to the spread of invasive weeds, and increased erosion and sediment movement in watersheds. The research has clearly indicated that defensible space distances beyond 100 feet can be counterproductive.

The present definition includes the term clearing, implying that defensible space should be clear of all vegetation. Creating large areas of clearance with little or no vegetation creates a **"bowling alley" for embers**. Without the interference of thinned, lightly irrigated vegetation, the house becomes the perfect ember catcher. In addition, when a fire front hits a bare fuel break or clearance area, a shower of embers is often released (Koo et al. 2012, Gould et al. 2009).

4. Require that, as part of any WUI vegetation treatment project, the plans include structure and community retrofits as a significant portion of the effort. This approach has been endorsed by a strong consensus of fire scientists and **is illustrated well in this National Fire Protection Association video with Dr. Jack Cohen: (https://youtu.be/vL_syp1ZScM)**.

5. Make sure that Cal Fire has a well-trained **adequately staffed Defensible Space Inspection Program** that focuses on identification of vulnerabilities of the home structure and then working outward to zones 1 and 2. The program should emphasize on-site public education. Quality of inspections and information conveyed is much more important than quantity of inspections performed. The program should, at minimum, match the length of the fire season. Urge local jurisdictions to adopt this model.

6. Science-based defensible space compliant plant list. Presently, plant lists for 100-foot defensible space zones provided by fire agencies are haphazard and unsupported by adequate research. The State Fire Marshal and the Board of Forestry, as part of the WUI vegetation management component of the VTP, should co-develop a comprehensive guidance list of approved plants within the defensible space zone. This list could eventually be adopted into Title 14 of the California Code of Regulations, and retail nurseries could use this list to create clear tag markers that specify plants as "Defensible Space Compliant."

7. Train Officials, Fire Marshals, Defensible Space Inspectors. There is no systematic training course or certification that teaches how to apply California Building Code (CBC) WUI standards at the building inspector level or a process that teaches how to apply state or local defensible space standards at the home inspector level. Building experts, fire, insurance, and private inspectors need to be trained on these unique processes. The draft EIR should set the framework to develop such a program as a mitigation process.

8. Help with grants and retrofits. Develop a plan to assist Fire Safe Councils in acquiring FEMA pre-disaster grants to assist homeowners in retrofitting their homes to reduce their flammability with known safety features (e.g., *exterior* sprinklers, ember-resistant vents, replacing flammable roofing and siding with fire-resistant Class A material, etc.). The effectiveness of exterior sprinklers was proved during the 2007 wind-driven Ham Lake fire in Cook County, Minn., where they had been installed on 188 properties. All of those properties survived; more than 100 neighboring properties didn't. Federal Emergency Management Agency (FEMA) hazard mitigation grants had covered the majority of the cost of the sprinklers.

9. Reassess the efficacy of back country fuel modifications.

10. Recognize that all chaparral is potentially threatened by excessive fire frequencies. Chaparral in the central and northern part of the state will likely be threatened by higher fire frequencies as they are in the south as the climate continues to change. There is no ecological rationale for fuel treatments in shrub dominated ecosystems in northern or southern California as claimed in previous draft EIRs.

11. Account for biodiversity in chaparral. Incorporate into the cumulative impact analysis how biodiversity may be impacted by the Program. See Halsey and Keeley (2016).

12. Detail impacts. Examine possible direct and cumulative impacts of the Program and develop legally adequate mitigations for those impacts as required by CEQA. Previous drafts have not done this.

13. Consultation on chaparral treatments. All projects involving old-growth chaparral (in excess of 75 years from the last fire) should be developed in consultation and in agreement with the California Native Plant Society as was previously indicated in the prior VTP draft.

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21. Increase transparency. Develop a web-based public notification process for projects similar to the US Forest Service SOPA website. For example: http://www.fs.fed.us/sopa/forest-level.php?110502

22. Plan for the future. Base project need, selection, and treatment approach, on projected climate change scenarios, not past, anecdotal experiences. Recognize that we need more vegetation/native habitat over broad landscapes storing carbon to slow climate breakdown, not less.

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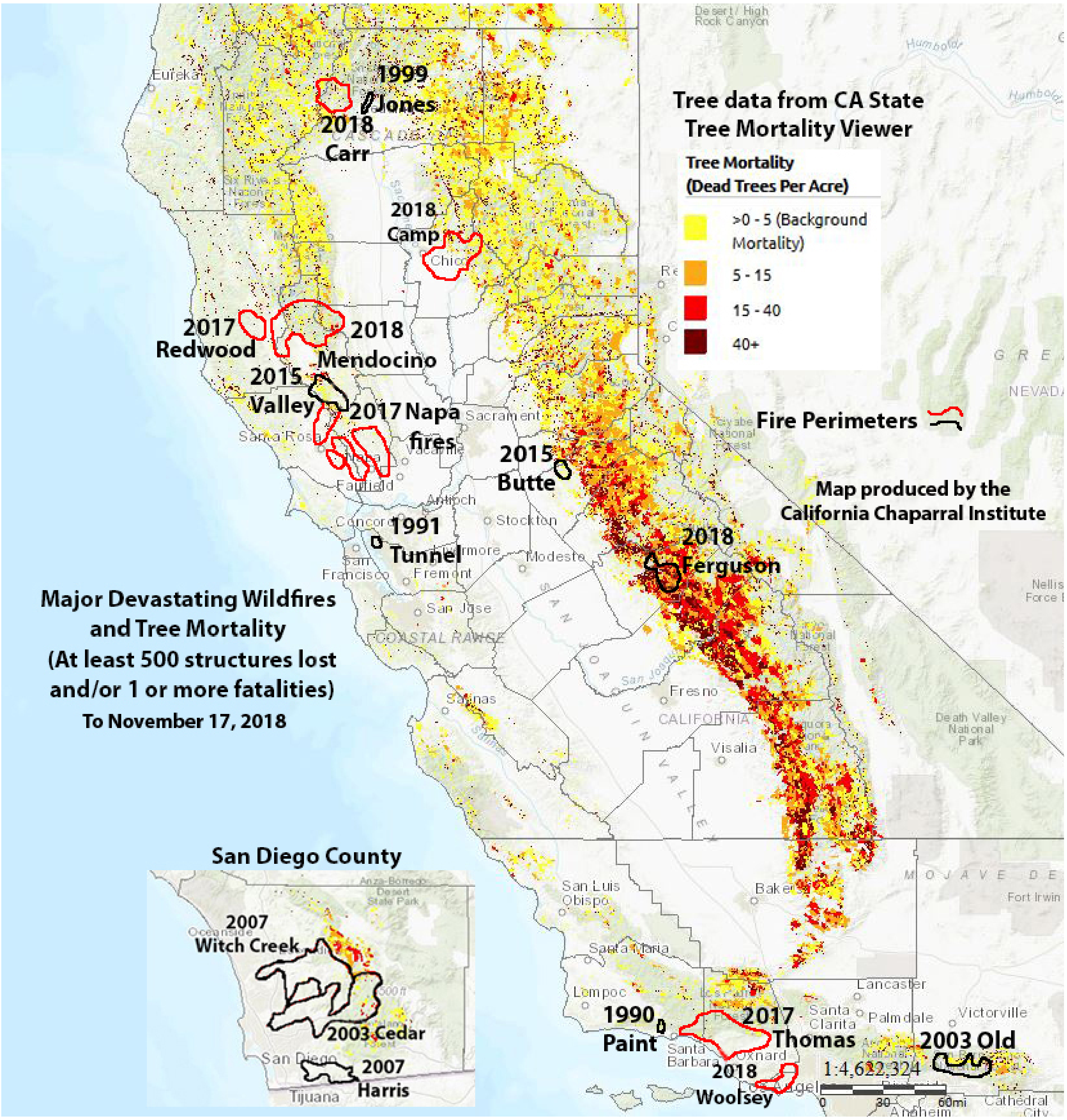

Figure 1. Overlay of California's most devastating wildfires with dead tree distribution. With the exception of the 2018 Ferguson Fire, concentrations of dead trees did not play a role in the state's most devasting wildfires as per [Cal Fire's official list](). In addition, the majority of California's most devasting wildfires have not involved forests.

Figure 2 (above). Three-hundred Feet of Clearance. Such bare ground can create a potential “bowling alley” effect, directing embers directly at the structure.
Figure 3 (below). Fuel break in the Trabuco Ranger District, Cleveland National Forest. Flashy fuels (grass) often invades fuel treatments, making the area more flammable than it was before.

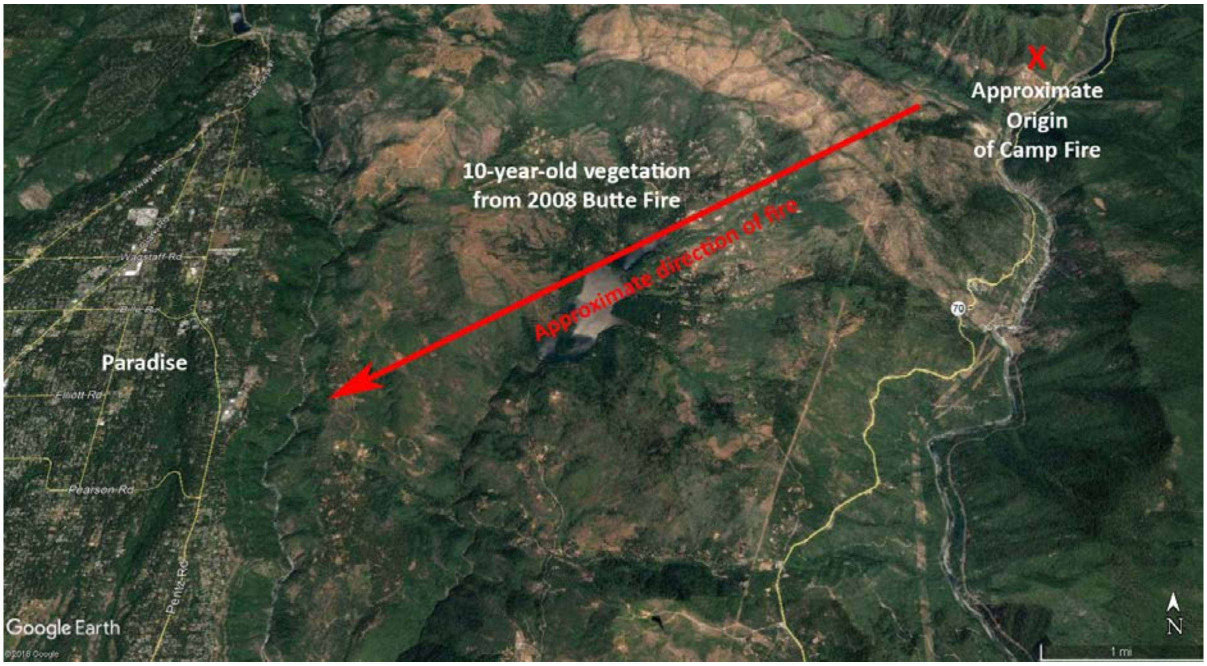

Figure 4 (above). The wind-driven 2018 Camp Fire moved quickly through approximately seven miles of 10-year-old fuels plus fuel management zones before igniting Paradise with a rain of embers.
Figure 5 (below). Ten-year-old fuels, salvage logging, and timber plantations characterized the land burned by the Camp Fire prior to hitting the town of Paradise. Image: John Muir Project.

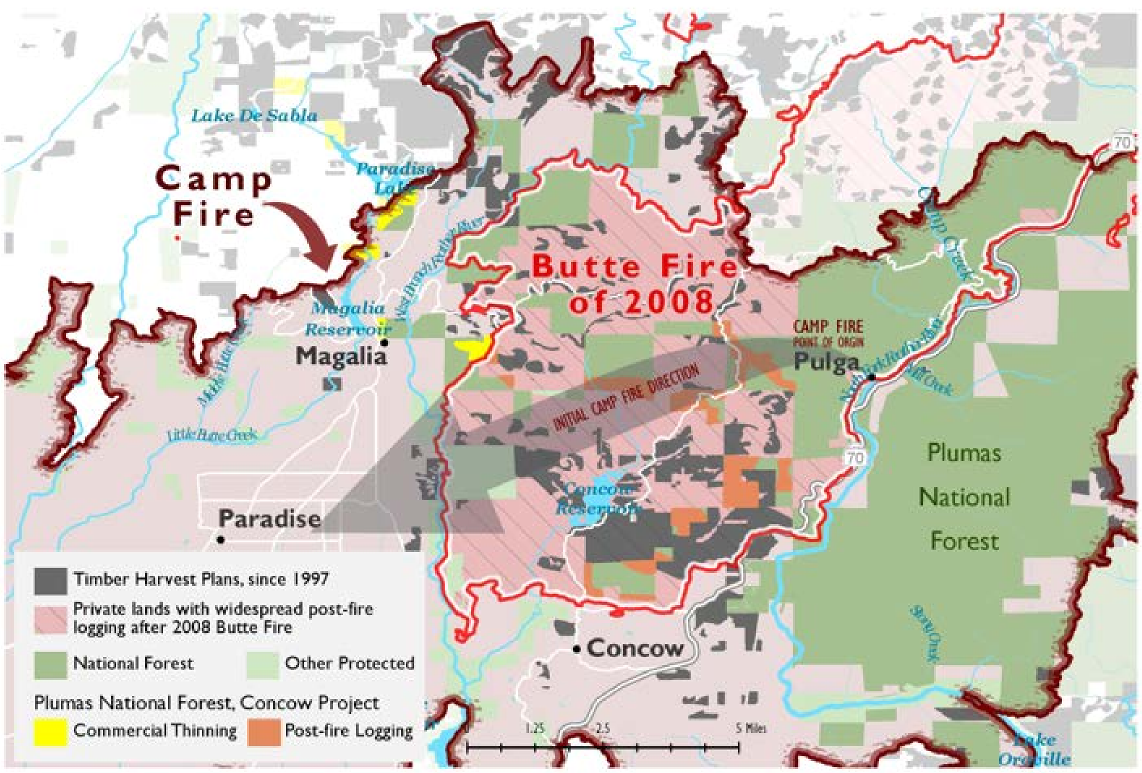

Figure 5 (above). Homes represent one of the most flammable concentration of dead fuels. Despite defensible space, the two homes on this hilltop burned in the 2014 Poinsettia Fire.
Figure 6 (below). Camp Fire, showing the devastation of homes in the Kilcrease Circle community of Paradise. Note the surrounding green, mature forest with little or no scorching. The homes were not burned by a high-intensity crown fire, but were ignited by embers, followed by home-to-home ignitions. Photo: Digital Globe, a Maxar company via Reuters, 11/17/2018.

Appendix A

California Chaparral Institute comment letters on previous VTP EIRs (2005 – 2018)

The California Chaparral Field Institute

…the voice of the chaparral

August 31, 2005

Mr. Jeff Stephens, Deputy Chief for Vegetation Management
California Department of Forestry and Fire Protection (CDF)
P.O. Box 944246
1416 9th St.
Sacramento, CA 94244-2460

Dear Mr. Stephens,

We are submitting the following comments in reference to the CDF's Notice of Preparation (NOP) for the Vegetation Management Program (VMP) Draft Environmental Impact Report of 2005.

There are four important issues we would like to address that have relevance to the proposed VMP and the upcoming final Environmental Report:

1. The use of vegetation treatment methods to attempt to reduce the frequency and size of catastrophic fires.
2. The need for a critical and objective analysis of the costs vs. benefits of various fuel modification treatments available today.
3. The classification of old-growth chaparral as "decadent."
4. The recognition of chaparral as an important economic, recreational, and natural resource that needs to be managed as carefully and with as much focus as the state's forest systems.

Our comments focus primarily on wildfires relating to chaparral, California's most extensive and characteristic plant community; an ecosystem that is also associated with the most devastating wildfires in the state. These are important points to highlight because much of what is within the California Fire Plan tends to treat different types of fuels with the same broad brush, "one-size-fits-all" approach, failing not only to recognize the distinct differences between forest and chaparral, but also the important differences within chaparral types themselves. These differences have important fire management implications that need to be addressed. Not doing so will dramatically reduce the effectiveness of our state's fire management efforts.

1. The use of vegetation treatment methods to attempt to reduce the frequency and size of catastrophic fires.

It is a common perception that wildlands in California are unnaturally overgrown with a half-century's worth of highly combustible brush and small trees because of successful firefighting efforts since the 1950s. Such conditions are often blamed for allowing wildfires to become large and catastrophic. As a consequence, firefighting agencies are frequently held responsible for being the cause of our current wildfire crisis. This model is well supported in the coniferous belt of California, but the lower elevation chaparral is a completely different story. Support for this perception, especially in southern California, has come from studies relating to systems in Baja California (Minnich 1983, 1995) that are not particularly comparable to landscapes north of the border.

A suggested remedy to correct the “fuels problem” has been landscape level vegetation management projects that include prescribed burning and other treatments. According to this model, once a “mosaic” of mixed aged fuels is created, the size and frequency of large, catastrophic fires will be reduced dramatically in California. This is suggested in the NOP as well as the California Fire Plan (1995).

Recent scientific research, however, performed over the past ten years by numerous investigators and since the Fire Plan was written seriously challenges this assumption (Keeley et al. 1999, Moritz 2003, Wells et al. 2004, Moritz et al. 2004). In particular, studies have shown that fuel age does not significantly affect the probability of burning. Zedler and Seiger (2000) examined the same question through mathematical modeling and arrived at the same conclusion. Under extreme weather conditions, fire rapidly sweeps through all chaparral stands, regardless of age.

In addition, the fire suppression/fuel accumulation model does not agree with fire history trends in southern California over the past century; the number of acres burned per decade has remained relatively constant (Keeley and Fotheringham 2003) with fire frequency increasing in lock step with population growth. Please see Figures 1 and 2. Indeed, roughly a third of San Diego County burns every decade. At no time in the past would fires have burned more frequently than this because it is at the threshold of tolerance for most chaparral species.

Although fuel is obviously important, we know fires do not become catastrophic without corresponding extreme weather conditions (low humidity, high winds and temperatures). During such conditions, fire can be spread by burning through younger fuels or by spotting up to a mile away from the fire front. Both the 2003 Cedar and Otay fires in San Diego County burned through multiple numbers of large, young age-class mosaics less than eight years old. Please see Figure 3. Reducing fuel loads at strategically placed locations can provide anchor points and safety zones for firefighters, especially during non-wind driven events, but they have not proven effective in stopping the spread of wind-driven fires.

Contrary to conventional wisdom, large wildfires have always been part of the southern California experience, even before fire suppression. Relating to a huge fire in Orange County, L.A. Barrett wrote, “Nothing like it occurred in California since the National Forests have been administered. In fact, in my 33 years in the Service, I have never seen a forest or brush fire to equal it.” Barrett wrote this in 1935 and was referring to one of several large wildfires that burned during the last week of September, 1889 that consumed an estimated 800,000 acres. This estimate represents a firestorm equivalent to the southern California event in October, 2003 that burned 750,000 acres.

2. The need for a critical and objective analysis of the costs vs. benefits of fuel modifications available today.

If landscape level fuel treatments are not effective in preventing large fires, how then do we reduce wildfire risk? Fuel treatments can be extremely expensive, pre-fire management funds are limited, and the windows available for prescribed burning projects are constrained by safety issues. When deciding what to do, our decisions should be based on a careful analysis of the costs and benefits of the various methods and strategies available to prevent loss of life and property. This sort of analysis is required before we can conclude with confidence how much modification to do and where to perform it.

As stated in the California Fire Plan,

> *“The typical vegetation management project in the past targeted large wildland areas without assessing all of the values protected. Citizen and firefighter safety and the creation of wildfire safety and protection zones are a major new focus of the new prefire management program. Now, increasing population and development in state responsibility areas often preclude the use of large prescribed fires…The vegetation management program will shift emphasis to smaller projects closer to the new developments, and to alternatives to fire, such as mechanical fuel treatment.”*

We support the objective of shifting our fire management focus to the wildland/urban interface with smaller fuel modifications as suggested by the California Fire Plan. If a thorough analysis of the true costs of various fuel modification treatments is performed (one has never been done), we believe concentrating efforts directly where loss of life and property can occur will produce the greatest and most effective benefit.

<u>Strategically placed</u> prescribed burns near communities, reasonable defensible space requirements around structures (thinning within the 30-100 foot zone rather than clearing to bare soil), and well coordinated education efforts through community based Firewise and Fire Safe programs are all within CDF’s mandate. And although difficult to implement, placing more emphasis on making structures more fire safe needs to be part of any long term fire planning process. Executing such a management plan will not only be the most efficient use of fire management dollars, but will also limit potential resource

damage that can be caused by large, landscape level vegetation management projects in the backcountry.

> *"Given that department funds for prefire projects are limited, the department must carefully and systematically select the projects that provide the greatest benefit for a given investment."*
>
> -California Fire Plan

3. The classification of old-growth chaparral as "decadent."

We would like to propose the CDF eliminate the term "decadent" when describing older-growth chaparral stands. Although the characterization has significance to firefighters when describing stands that have accumulated dead material, it is has pejorative connotations and does not reflect our current understanding of the chaparral ecosystem.

Use of this term has unfortunately led credence to the assumption chaparral "needs" to burn every 20 to 30 years to in order to renew itself, suggesting the necessity of using prescribed burns as a resource management tool. Field research has failed to support this notion. Specifically,

- The continued ability of chaparral stands nearly a century old to maintain productive growth has been confirmed by multiple investigations (Hubbard 1986, Larigauderie et al. 1990),
- The accumulation of living material (biomass) steadily increases for at least 45 years in chamise chaparral (Specht 1969) and probably more than 100 years in other types, especially north facing stands, and
- Shrubs in older chaparral communities are not constrained by limited soil nutrient levels (Fenn et. al. 1993).

While it is true some individual specimens of certain ceanothus species will die as a stand reaches 20-40 years of age (Keeley 1975), others remain an important part of chaparral stands over 90 years old (Keeley 1973). All of these species have dormant seed banks that ensure their long term persistence in the ecosystem even if fires only occur every century or so. When spaces do appear in the chaparral, living plants quickly fill the void. For example, chamise shrubs that have not experienced fire for at least 80 years continually send up new stems from their base (Zedler and Zammit 1989).

Not only do mature shrubs continue growing over time, but seeds from the majority of species common to north facing, mesic chaparral stands require long fire-free environments before being able to germinate. Moisture protecting shrub cover and leaf litter are needed to nurse the seedlings along. Plants such as scrub oak (*Quercus berberidifolia*) and holly-leafed cherry (*Prunus ilicifolia*) fall into this category. So rather than being a "decadent" habitat of dying shrubbery, many mature chaparral stands are just beginning a new stage of growth after fifty years of age.

Although chaparral is a fire-adapted ecosystem and some types do accumulate significant amounts of dead wood, the system certainly does not need human caused ignitions to remain healthy especially in light of the increased number of fires occurring in southern California shrublands today. The idea chaparral needs to burn is related more to human perceptions than any ecological process.

The term decadence needs to be placed in the context of what we know about threats to healthy chaparral ecosystems. Senescence risk, which is the risk of loosing species if fires are too infrequent has never been demonstrated for any chaparral in any part of the state. In fact, studies show good ecosystem recovery even following 150 years without fire. Immaturity risk on the other hand, which is the risk of loosing species if fires are too frequent, has been repeatedly demonstrated in countless studies.

4. The recognition of chaparral as an important economic, recreational, and natural resource that needs to be managed as carefully and with as much focus as the state's forest systems.

Chaparral provides essential protection against erosion on our hillsides, allows the recharge of underground water supplies, provides recreational value, and offers unique opportunities for citizens to remain connected to nature on a local level. Yet the system remains relatively unknown and little understood by both the public and many land managers.

This misunderstanding has caused, as mentioned above, chaparral to be either ignored or lumped together with other vegetation systems. This leads to poor land management decisions and inaccurate conclusions. For example, while mentioning California's unique Mediterranean climate, the California Fire Plan misapplies research that is applicable to certain non-Mediterranean influenced forests, but not chaparral.

> "*Suppression of fire in California's Mediterranean climate has significantly altered the ecosystem and increased losses from major fires and fire protection costs. Historical fire suppression has increased periods between fires, volumes of fuel per acre, fire intensities, etc….*"

While this may be true for some of the conifer forests on the western slope of the Sierra and some other southwestern forests (Swetnam et al. 1996), it is definitely not true for southern California chaparral as explained earlier. An additional claim states that,

> *"Vegetation in California's Mediterranean climate was dominated by a complex succession ecology of more, smaller and less damaging wildfires before European settlement began."*

Again, this may applicable to certain forests in the state as shown by tree ring studies, but there is no such evidence supporting such a conclusion in chaparral dominated systems.

Applying the right knowledge with the appropriate ecosystem is crucial if we want to properly manage our state's wildlands. Since chaparral is California's most extensive plant community, it is prudent to make sure we understand both its particular fire regimes and its sensitivities to changes in those regimes.

There was a period in the last century when one of the primary objectives of the CDF was to increase and "improve" range land by eliminating chaparral through type-conversion through the use of increased fire frequency. With increasing population pressures, a generally fire illiterate public, and an expanding wildland/urban interface, the Department's mission is quickly changing. The CDF is not only a highly skilled resource manager trying to protect life and property from wildfire, but also one trying to balance the demands of competing interests in order to prevent the wholesale elimination of California's native landscapes.

Preventing unwanted type conversion of chaparral due to increased fire frequency should be added as one of the VMP's objectives and included in the final environmental report. One of the best ways to accomplish the "control of invasive and noxious weeds", a current program objective, is to maintain healthy chaparral plant communities by making sure the appropriate fire regimes are preserved (Keeley 2004). We don't really know what the natural fire return interval is for each type of chaparral, but we do know fires occurring closer than 15 – 20 years apart can threaten many of them (Zedler et al. 1983, Haidinger and Keeley 1993, Keeley 1995, Zedler 1995, Jacobson et al. 2004). There is a distinct possibility there can be local extinctions of certain species if some chaparral types are not allowed to exist past 50 years.

The California Fire Plan acknowledges that,

> *"California has a complex fire environment, with multiple climates, diverse topography and many complex vegetation communities. CDF data on assets at risk to damage from wildfire is incomplete."* And, *"unnaturally frequent patterns of fire can overwhelm the inherent ability of many fire adapted species of plants to sustain themselves."*

We feel it is crucial for the CDF's final environmental report reflect these observations in light of the data we have presented here.

Sincerely,

Richard W. Halsey
Director
Southern California Chaparral Field Institute

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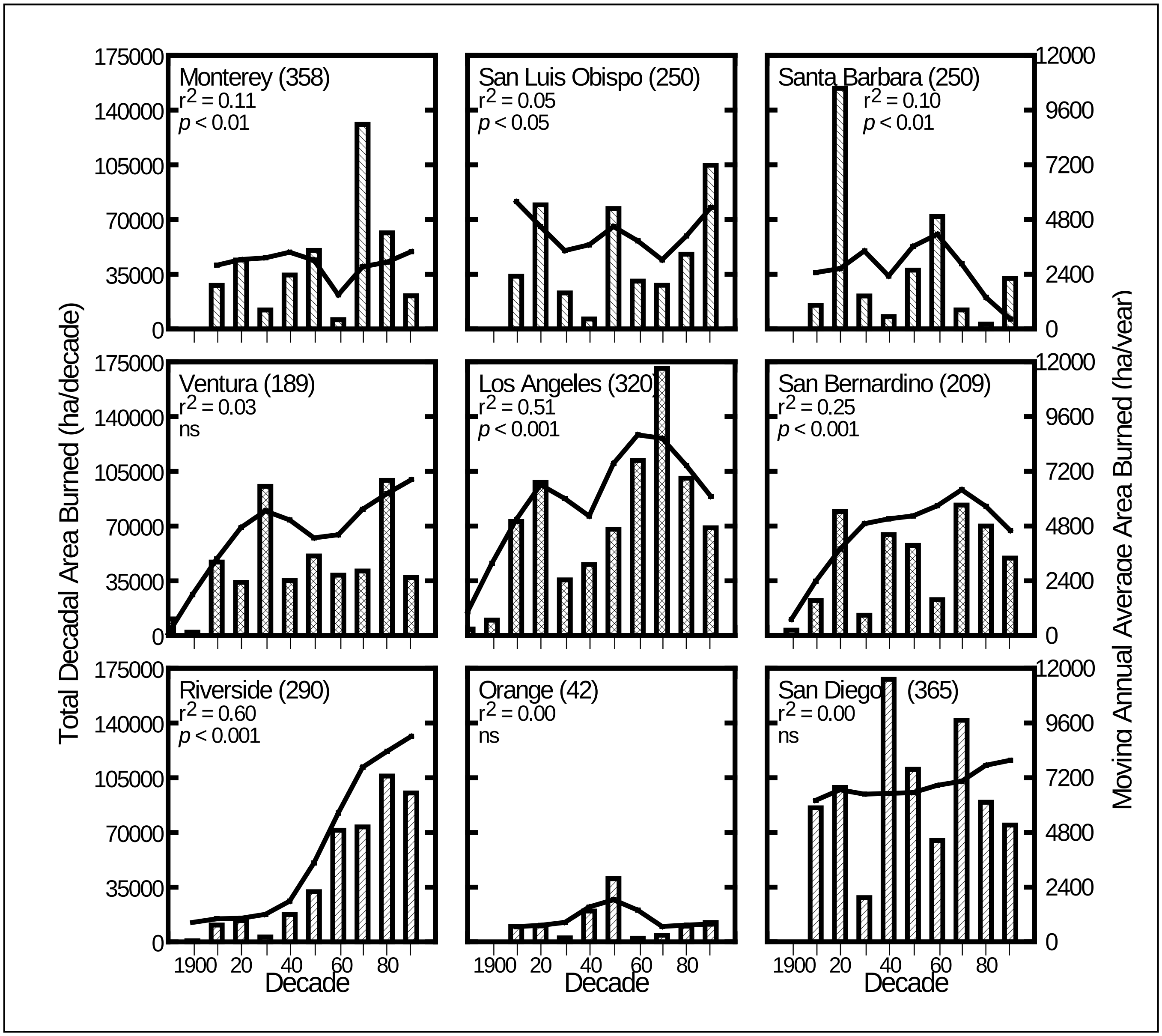

Fig. 1. Area burned per decade and 10-year running annual average during the 20th century for nine counties in central and southern California. Shrubland area in thousands of hectares shown in parentheses following the county name. 1 hectares equals 2.47 acres (adapted from Keeley and Fotheringham 2003).

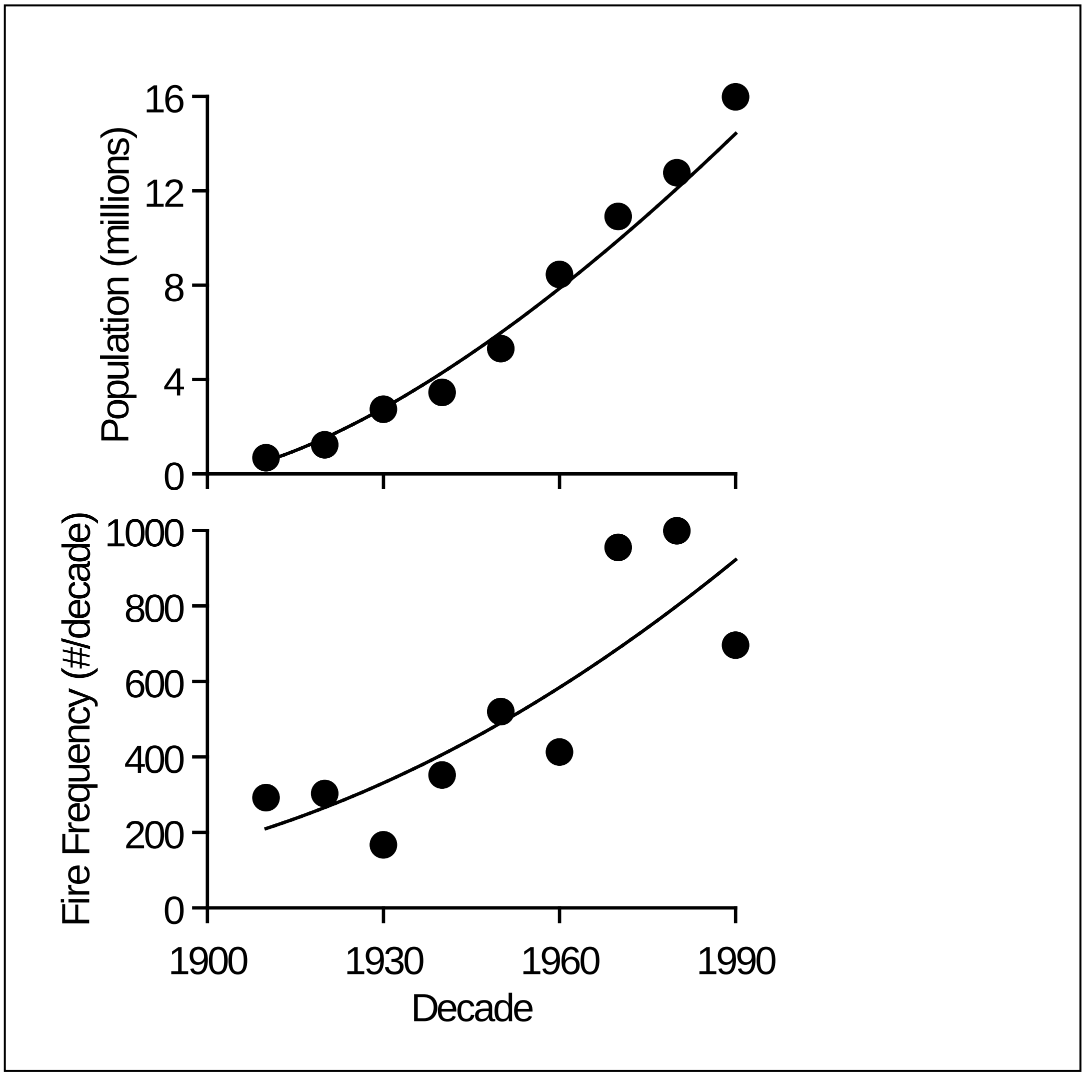

Fig. 2. Decadal changes in human population and fire frequency in southern California (from Keeley and Fotheringham 2003).

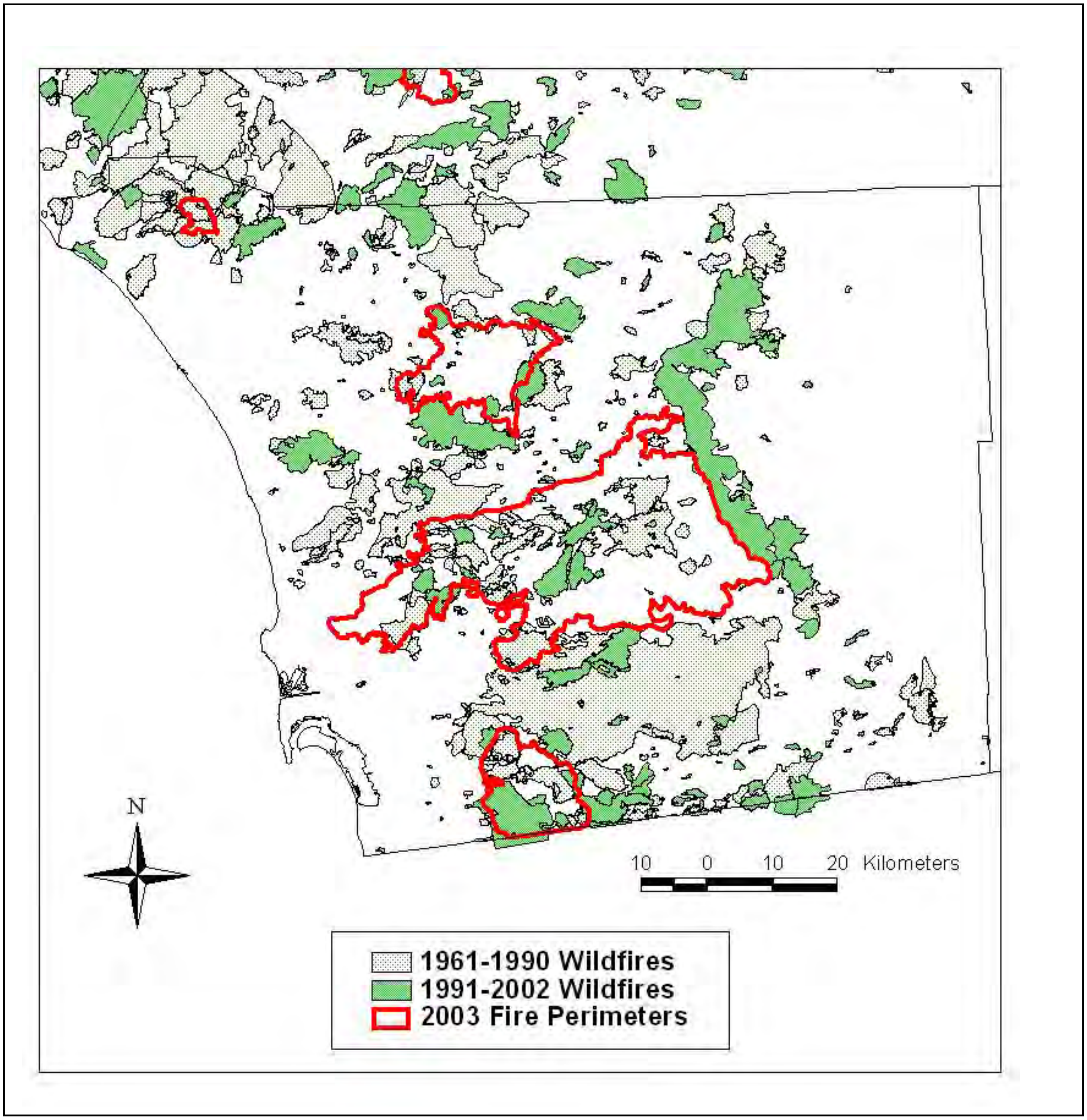

Figure 3. Historical Fire Perimeter Map of San Diego County. Both the Otay fire (lower middle dark outline) and the Cedar (central dark outline) burned through several large patches (mosaics) of young chaparral (Halsey 2005).

CALIFORNIA CHAPARRAL INSTITUTE

...the voice of the chaparral

January 25, 2013

Board of Forestry and Fire Protection
Attn: George Gentry
Executive Officer
VegetationTreatment@fire.ca.gov
Sacramento, CA 94244-2460

Re: Draft Program EIR for the Vegetation Treatment Program

Dear Mr. Gentry and Board Members,

> **There are two types of fires; the ones we prepare for and the ones that do all the damage** (Fotheringham 2012).

Unfortunately, the Draft Program Environmental Impact Report for the Vegetation Treatment Program (PEIR) continues to ignore the fires that cause the most damage by focusing exclusively on habitat clearance projects.

This despite extensive scientific research that clearly indicates that the best way to effectively protect lives, property, and the natural environment from wildfire is through a **comprehensive approach** that focuses on *community and regional planning, ignitability of structures, and fuel modifications within and directly around communities at risk.*

> **Every decade we increase funding for fuel modifications and fire suppression activities, followed by a decade of even worse fire impacts** (Keeley 2009).

By stating that, "The proposed program is intended to lower the risk of catastrophic wildfires on nonfederal lands by reducing hazardous fuels," the PEIR perpetuates and expands the same approach that has failed to reduce cumulative wildfire loss and firefighting expenditures over the past century. **Consequently, the Board of Forestry is NOT addressing the main causes for loss of life and property from wildfire.**

Attempt to Exempt CalFire From CEQA

All projects within the 38 million acres of California (1/3rd of the state) the Board of Forestry (BoF) has targeted for habitat clearance by burning, grinding, grazing, or herbicide will only be evaluated by a vague, yet-to-be formulated checklist. They will not be reviewed through the California Environmental Quality Act (CEQA). This will prevent citizens and independent scientists from questioning a project under CEQA that they feel is environmentally damaging.

We find this attempt to exempt CalFire from the environmental protections of California's premiere environmental law disturbing, although not surprising. One of the objectives under Goal #5 of the 2010 California Fire Plan endorses efforts to "remove regulatory barriers that limit hazardous fuel reduction activities." As we stated in our comment letter on the Draft Fire Plan, we strongly disagree with this objective and believe it is inappropriate for a government entity to advocate such action.

Rather than seeking ways to circumvent proper scientific oversight and efforts to insure that scarce fire management resources are used in the most effective way, the BoF should recommend inclusive community processes that embrace environmental review and invite all stakeholders. While democracy can be inconvenient, and collecting information that may question a proposed project frustrating, it is the best way to create a successful fire risk reduction strategy.

Impossible to Properly Evaluate the PEIR

By creating an overly broad "program" EIR without explaining where projects will be done, the BoF is making it impossible for the public and the scientific community to properly evaluate its plan to clear more than two million acres of wildland in California per decade. This is not the intent of a program EIR.

A program EIR allows for a more "exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action" AND allows "the lead agency to consider broad policy alternatives and program wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts" (CEQA Tool Box).

The BoF should have taken this opportunity to truly consider the entire fire environment rather than merely duplicating and expanding a program of questionable efficacy, namely more habitat clearance. Instead, the BoF is proposing an unacceptably open-ended, hypothetical Program that amounts to a "blank check," preventing subsequent California Environmental Quality Act (CEQA) reviews of thousands of projects.

The only reference to where the projects will be is an approximate number of acres within broad, and incredibly diverse, bioregions. Only a vague, yet-to-be-determined checklist will be used to evaluate individual projects. If a project "passes" the checklist, it will be within the scope of the PEIR and exempt from subsequent CEQA review.

Over the past decade, our experience has shown that citizen and independent scientific oversight is essential evaluating habitat clearance operations. Local, state, and federal agencies have repeatedly demonstrated a willingness to ignore potentially significant environmental impacts in order to complete projects.

The best opportunity Californians have to ensure that projects are both necessary and do not cause significant environmental damage, is their ability to the challenge agency actions through CEQA. This Program PEIR is attempting to take that protection away.

Faulty Conclusions

We find the PEIR's conclusions that individual and cumulative impacts are all less than significant are not supportable. The conclusions are based on broad, inaccurate assumptions and incomplete research, especially in regard to shrubland ecosystems. In fact, when it comes to using the most relevant, up to date scientific data, the PEIR fails to satisfy some of the most important standards required by CEQA.

Our analysis indicates there will likely be significant environmental impacts that cannot be mitigated as the PEIR describes.

Therefore, this PEIR needs to be retracted. In its place, the BoF should create a **comprehensive program** reflecting specific, regional differences that will achieve the Program's key goal, "to prevent loss of lives, reduce fire suppression cost, reduce private property losses and protect natural resources from devastating wildfire." (PEIR 1-1)

We offer a summary of such a comprehensive approach in our **suggested alternative to the Program** as part of our comments below.

In brief, a comprehensive approach will:

Save more lives and property. Most homes burn and lives are lost because communities are not fire safe, not because of inadequate wildland vegetation treatments of the type this PEIR proposes.

Significantly reduce the amount of habitat clearance. As demonstrated by science and codified in PRC 4291, fire safe structures and communities require much less surrounding vegetation management. As set forth in PRC 4291, local agencies may exempt from the law's standards, "structures with exteriors constructed entirely of nonflammable materials, or conditioned upon the contents and composition of the structure, and *may vary the requirements respecting the management of fuels* surrounding the structures in those cases."

It's not the absence of clearing distant wildand vegetation that is responsible for the loss of homes. The losses are caused by the fuels under the front porch, the needles in the rain gutter, and the location of the home.

<u>Save the state a significant amount of money</u>. Instead of continually clearing and re-clearing wildland areas, year after year, the state should focus on long term fixes to recurring wildfire hazards such as directing the removal of flammable cultivars (palms, acacia, etc.) within communities, focusing on science-based defensible space zones, help communities find funding to retrofit unsafe structural problems (vents, roofing, etc.), and most importantly **continue to develop its analysis of fire hazard areas in order to provide guidance to land planning agencies.** The BoF can use its current regulatory authority to accomplish much of this.

Habitat clearance activities beyond defensible space zones of the type the PEIR describes creates a financial black hole. In addition, it is likely the currently envisioned Program will become embroiled in expensive litigation.

The Failings of the PEIR

1. Underlying Bias

The proposed Vegetation Treatment Program is based on a questionable, overly-broad assumption about a natural landscape that is recognized as one of the most diverse biological regions on the planet. As a consequence, the PEIR's proposed Program, conclusions, and mitigations fail to accomplish the document's stated goals and threaten California's natural environment.

The broad assumption that underlies the entire PEIR is presented in the Executive Summary:

> Past land and fire management practices have had the effect of increasing the intensity, rate of spread, as well as the annual acreage burned on these lands (BOF, 1996).
>
> Much of this change in threat can be attributed to fire exclusion policies instituted over the past 100 years (Bureau of Land Management, 2005).
> (PEIR ES ii)

While it is true some forested communities have missed fire cycles and may be burdened by increased vegetation due to past fire suppression efforts, this is not the case for a significant amount of the natural landscape in California. For example, in evaluating research over the past decade concerning southern California, leading fire scientists have concluded in a US Forest Service publication,

> The fire regime in this region is dominated by human-caused ignitions, and fire suppression has played a critical role in preventing the ever increasing anthropogenic ignitions from driving the system wildly outside the historical fire return interval. Because the net result has been relatively little change in overall

> fire regimes, **there has not been fuel accumulation in excess of the historical range of variability, and as a result, fuel accumulation or changes in fuel continuity do not explain wildfire patterns** (Keeley et al. 2009b).

Although there are incidental references in the PEIR that,

- most of the brush and chaparral systems are probably operating close to their natural range of variation in fire frequency (PEIR 4.2-9)
- plant communities being threatened by type conversion due to excessive fire frequency (as opposed to vegetation build up via past fire suppression)
- current forecast models indicate that there will be an increase in grasslands... (PEIR ES iii)

the PEIR did not incorporate this information into the Program, in limitations on the 38 million acres of landscape “available for treatment,” or within suggested mitigations.

The influence of the overly-broad and incorrect assumption can be seen in the predominant type of literature cited. Despite the fact that native shrublands, primarily chaparral, represent the most extensive native plant community in California, most of the literature cited is primarily concerned with forested ecosystems (specifically, research that conforms to the PEIR’s basic assumption).

We discuss the failure of the PEIR to discuss the main points of disagreement below, but the issue here is that these references do not reflect the incredibly diverse ecosystem types in California that the BoF intends to clear, nor do they “provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences.” (Section 15151 Standard for Adequacy of an EIR, CEQA)

By making the inaccurate assumption that all vegetation communities are overgrown due to past fire suppression practices and need to be “treated,” the BoF has designated about the third of the state of California to be included into its habitat clearance Program.

Syphard et al. (2006) summed up the problem well when they wrote,

> Despite overwhelming evidence that fire frequency is continuing to increase in coastal southern California (Keeley et al. 1999, Moritz et al. 2004, NPS 2004), the current fire-management program subscribes to the paradigm that fire suppression has led to fewer, larger fires, and that landscape-scale prescribed fire should be used to create a fine-scaled age mosaic. Considering the results of our simulations, we believe that adding more fire to the landscape through broad-scale prescribed burning may have negative ecological effects. Instead, our results are consistent with recent recommendations from the U.S. National Park Service to change the fire management program to focus fuel-reduction efforts and prescribed fire on strategic locations such as the wildland–urban interface (NPS 2004).

Unfortunately, one of the Program’s main “treatments” is the very broad-scale burning project being rejected by a growing number of agencies (Fire Management Plan FEIS Santa Monica Mts 2005). In fact, the previous California Fire Plan (1996) rejected such an approach:

> The typical vegetation management project in the past targeted large wildland areas without assessing all of the values protected... The vegetation management program will shift emphasis to smaller projects closer to the new developments.

Specifically the PEIR states,

> Large Scale Wildland Treatment—These are areas up to the watershed scale, or even greater, that are treated to reduce highly flammable or dense fuels, including live brushy plants in some vegetation types (such as chaparral), a build up of decadent herbaceous vegetation or, dead woody vegetation. (PEIR 1-12)

The concept of “decadent herbaceous vegetation” has been used for years by fire management agencies to justify burning chaparral for resource reasons (Halsey 2011). There is no scientific justification for such burning (Montygierd-Loyba and Keeley 1985, Keeley et al. 1985, Keeley et al. 2005). The tendency for the PEIR to view native shrublands within a biased, pejorative context is a common theme:

> However, in the absence of periodic disturbance, the continued productivity of the state’s rangelands is being *threatened by the encroachment of non-native invasive plants and native shrubs*. Vegetation treatments can help counter these *negative trends*, and improvement of rangeland condition is a primary objective of the VTP. (PEIR 1-5) *Emphasis added.*

The desire to modify the landscape to improve economic output is certainly a reasonable objective for a statewide management plan. However, allowing a systemic, negative bias against native ecosystems to influence policy management decisions is not. This bias appears to be one of the reasons the PEIR has failed to properly consider the cumulative effects on shrubland ecosystems (see below).

2. Inadequate Support for Program’s Key Goal

While we agree that vegetation management can be an essential part of reducing wildland fire risks and can be effective in moderating wildfire behavior, the PEIR fails to provide an adequate level of support for its exclusive, broad brush approach: clearing habitat on a statewide basis. This failure to find adequate support is likely because, as Mell et al. 2010 wrote,

> a clear link has not been established between specific fuel treatments (e.g. reducing tree density or raising crown base height) and the resulting change in

> wildland fire behaviour, *especially over a range of environmental conditions*. (emphasis added)

Instead of reducing the *risks* of wildland fire, the factors that actually lead to the loss of life and property, the Program focuses exclusively on addressing the *hazard* of wildland fire, which is an unrealistic approach (hazard is anything that can cause harm, risk is the chance the hazard can cause harm to you). **The Program's exclusive approach is equivalent to trying to prevent earthquakes** (the hazard) instead of addressing the actual risks by earthquake-safe land planning and retrofitting buildings and structures to survive tremors.

The support the PEIR provides for this approach is inadequate not only because it broadly misapplies papers that are generally forest-based (as discussed above), but it exaggerates the fire management benefits of fuel treatments by ignoring the critical role played by community and home fire prevention. For example, the PEIR cites the success of fuel treatments during the 2007 Angora Fire:

> The Angora fire burned 3071 acres of forest and urban interface, destroying 254 homes and costing $160 million dollars. The fuel treatments generally worked as designed, significantly changing the fire behavior and subsequent fire effects to the vegetation (Safford, et. al., 2009). (PEIR 4.2-25)

While the Safford et al. paper is an excellent analysis of how fuel treatments can modify fire behavior and protect trees, the paper's conclusion that is most relevant to the PEIR's key goal to "reduce private property losses" is that,

> **Many homes burned in the Angora Fire in spite of the fuel treatment network;** government efforts to reduce fuels around urban areas and private lands do not absolve the public of the responsibility to reduce the flammability of their own property. (Safford et al. 2009)

Without an equal effort to address this issue, the BoF will be unnecessarily damaging the natural environment and wasting tax-payer dollars through its exclusive approach.

The PEIR then cites the Emergency California-Nevada Tahoe Basin Fire Commission Report (2008) by noting its 48 findings, "that serve as a plan to reduce said wildfires and negative impacts in the future."(PEIR 4.2-25)

Of the 48 findings, six are directly related to community and home fire prevention and six more deal with fire suppression. This was in recognition that it wasn't flaming trees that ignited the 254 homes that were lost, but other burning houses. While no single one cause could be blamed for the losses, flammable housing materials, wind blowing in alignment with streets, and the presence of logging slash from past commercial logging projects played important roles (Murphy et al. 2007).

The failure of fuel treatments to protect flammable communities is a frequent phenomena as demonstrated in the 2007 Grass Valley Fire (Cohen and Stratton 2008, Rogers et al. 2008), the 2003 Cedar Fire (Keeley et al. 2004), and the southern California 2007 firestorm (Keeley et al. 2009a). Such observations indicate a clear case for the need to conduct an objective cost/benefit analysis of fuel treatments (Keeley 2005).

When addressing fires driven by severe weather conditions (the ones that cause the most damage to life and property), the PEIR is generally dismissive of the ability to deal with them because these fires are "difficult to control even by the world's most comprehensive wildland protection system." (PEIR 4.2-10)

We find the failure to address wind driven fires as one of the major failures of the PEIR. Research is showing that with proper land planning, much of the risk presented by wind driven fires can be reduced significantly (Syphard et al. 2012, Moritz et al. 2010, Parisien and Moritz 2009).

3. Inadequate Disclosure of Expert Disagreements, Literature Cited

CEQA guidelines clearly state that,

> Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

The PEIR has failed to meet this guideline.

For example, we found no reference to the ongoing controversy regarding the benefits of severe, stand replacing fires and associated treatments in forests (Bond et al. 2012, Bond et al. 2009).

Relating to an underlying assumption that is aligned with the forest/fuel accumulation bias noted above, the PEIR claims that short fire return intervals in "frequent fire adapted communities",

> ...maintained an open, park-like forest stand with a continuous ground cover of grasses, herbs, and shrubs beneath the forest canopy (Kaufmann and Catamount, [nd]; Parsons and DeBenedetti, 1979). (PEIR 4.2-1)

The Kaufmann reference is a non-scientific publication that has more to do with dry-ponderosa pine forests in the southwest than the mixed conifer systems that are common in California. The Parsons paper did not conclude that forests in California were "open, park-like" with a "continuous ground cover of grasses." What the paper actually said about the mixed-conifer zone of Sequoia and Kings Canyon National Parks was that,

> The varying intensities and frequencies of the fires that occurred in these forests under natural conditions would have created a mosaic of open and closed canopy conditions, as well as heavy to minimal ground fuels.

The hypothesis that a "continuous ground cover of grasses" in Sequoia has been rejected by more recent research (Evett et al. 2003).

There are also new studies the PEIR failed to note that raise questions concerning the impact past fire suppression practices have had on mixed conifer forests in California. Odion and Hanson (2008) and Odion et al. (2009) suggest that forested areas in California that have missed the most fire return intervals (i.e., the most fire suppressed) are burning mostly at low/moderate-intensity and may not be experiencing higher levels of high-intensity fire than areas that have missed relatively fewer fire return intervals.

The one-size-fits-all approach the PEIR takes regarding fire suppression is not scientifically supportable and raises serious questions about the PEIR's conclusions.

For shrubland ecosystems, which have completely different fire regimes and responses to management than forests, there were less than a dozen peer-reviewed papers referenced (out of nearly 1,000 literature citations) relating directly to fire. Most of those were more concerned with the spread of invasive species than fire management. **We find this absence inexcusable, especially considering the fact that the most expensive, devastating wildland fires in California are associated with these ecosystems.** We are especially perplexed because there has been a wealth of research concerning shrubland ecosystems conducted over the past decade indicating that:

- Unlike some forests, native shrublands have not become unnaturally dense with vegetation due to past fire suppression practices (Keeley et al. 2009b, Keeley et al.1999)

- Prescribed burning is unlikely to have much influence on fire regimes in southern California (Price et al. 2012)

- Large, severe, infrequent wildfires are the natural, historical pattern in central and southern California (Lombardo et al. 2009, Mensing and Bryne 1999, Keeley and Zedler 2009)

- The age of vegetation has very little to do with the size of fires (Moritz 2003, Moritz et al. 2004)

- Old-growth shrublands are healthy, dynamic ecosystems (Keeley et al. 2005)

All of these findings are contrary to the Program's rationale for conducting habitat clearance in central and southern California shrublands. For example,

> Well planned prescribed burning can be an effective means of reducing fuels that result from long periods of fire exclusion while moderating potential ecosystem damage (Knapp et al., 2005). (PEIR 1-4)

Here is what the cited Knapp et al. document actually said in reference to chaparral:

> Because of frequent human-caused ignitions and seasonal hot and dry winds, the fire regime remains similar today, despite fire-suppression efforts.
>
> The bottom line is that the potential for shifts in the plant community exists when the heat generated by prescribed burning is dissimilar to what would have been experienced with the fire regime that species evolved with.

The PEIR also continually refers to the creation of hydrophobic soils during severe fires as a justification for prescribed burns:

> Although the potential exists to create hydrophobic soils through prescribed burning, burning prescriptions typically are successful at keeping severity low enough to prevent formation of hydrophobic soils (DeBano, 1989). (PEIR 5.7-12)

Soils in chaparral are hydrophobic whether or not they are burned. There has not been any extensive study of quantitative effects of low, moderate and high severity burning on hydrophobicity and soil loss. Burning can cause the hydrophobic layer to sink in the soil and is thought to increase top soil erosion, but the field studies show that its effect disappears quickly after the first rains (Hubbert et al. 2006). More importantly, there have been quite a few studies of postfire erosion and debris flows and hydrophobicity is not typically a major component of these models as substrate type and slope incline are many times more deterministic in predicting soil loss (Cannon et al. 2009, Gartner et al. 2009).

It is clear the authors of the PEIR misunderstood the actual conclusions of some cited papers, did not conduct an adequate literature search, and appear to have ignored contrary evidence.

4. Questionable Citations

The two key references the PEIR provides to support its Program to conduct chaparral clearance projects in southern California are non-peer reviewed documents. One, San Diego County’s 2003 Wildland Task Force Report, was removed from circulation on August 24, 2004, after the scientists who were quoted within wrote strong letters to the San Diego County Board of Supervisors indicating their work had been misquoted and misrepresented by county staff. The PEIR stated,

> In its August 2003 report, the San Diego Wildland Task Force agreed that fuel or vegetation management is the single most effective tool available to mitigate

> fires. The build-up of fuel greatly affected the intensity and speed of the recent fires contributing to the loss of lives and property. (PEIR 4.2-8)

The scientists cited in this Task Force Report made it clear they **did not support this conclusion**. In fact the scientists wrote to the Board that they found the report "woefully inadequate and biased in its treatment of the available scientific information, and flawed in many of its assumptions, its treatment of published data, and its recommendations concerning vegetation management as part of a comprehensive fire-risk reduction strategy" (Spencer et al. 2004, Halsey 2012).

There appear to be questionable citations in other subject areas as well. The PEIR cites only one outside reference in its Wildfire Trends Introduction to support its contention that "... streams are being infiltrated by silt and debris following high severity fires, and unnaturally severe wildfires have destroyed vast areas of forest (Bonnicksen, 2003)." (PEIR 4.2-3)

This reference is the testimony to the Committee on Resources, U.S. House of Representatives by a controversial timber industry spokesperson whose credentials have been questioned by other scientists. In an open letter to the press the scientists wrote that, "not only do the views and statements of Dr. Bonnicksen fall far outside the mainstream of scientific opinion, but more importantly that Dr. Bonnicksen has misrepresented himself and his qualifications to speak to these issues" (Rundel et al. 2006).

The concept that severe wildfires have "destroyed" vast areas of forest in California is a subjective perspective that does not belong in a what should be a scientifically-based analysis. Regarding streams "being infiltrated by silt," the National Marine Fisheries Service (2005) has properly examined the matter and has concluded:

> Wildfires occurring within various locations throughout the action area indirectly contribute fine sediment to streams. Although effects of fires may degrade stream habitat in the short-term, recent theory suggests wildfire has a role for creating and maintaining landscape characteristics, habitat complexity, and species diversity (Brown 1990, Rieman and Clayton 1997, Gresswell 1999).

The lack of transparency in the PEIR's citations is a pervasive issue. Some citations can't be found (e.g. BOF 1996), it's frequently unclear what they are referring to (e.g. Sugihara et al., 2006), and many are not relevant to the statement being supported (as noted above).

5. Areas of "Treatment" Unknown

According to CEQA Guideline 15124(a): "The precise location and boundaries of the proposed project shall be shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map." No such maps are included in this PEIR.

The maps that are included are either of the entire state or of large, complex bioregions. These are not helpful since approximately *only* 1/3 of those areas are apparently affected by the Program. These areas are not identified.

Even if the maps provided by the PEIR are used to estimate where projects might occur, there are conflicts between what the maps indicate and what the PEIR states. For example, the document's Condition Class map (4.2-13) indicates that much of southern coastal California is either significantly or moderately altered from its historical fire regime condition class. Yet the PEIR text cites research showing that most chaparral, the dominant ecosystem in coastal southern California, is within its historic fire return interval. In fact, the US Forest Service research has shown that most of the chaparral in the four National Forests in southern California actually has a negative departure from historical fire patterns, meaning the native shrubland ecosystem is being threatened by too much fire as opposed to not enough (Safford and Schmidt 2008).

Since the PEIR does not specify which landowners are part of this Program, a landowner, a land manager, or the neighbor of a cleared parcel has no way of determining whether or not they are subject to this Program, or even of knowing whether they are affected by it. As a consequence, effected parties have no idea if they should be concerned with this PEIR or not. Therefore, the lack of specific location information makes it impossible for this document to meet CEQA's requirement of notification.

Unfortunately, since the PEIR does not include information documenting public notices for its review period, we have no way of determining whether the public was properly notified at all.

6. Impossible to Determine Significant Impacts

Because the PEIR is so vague and does not identify any of the project areas, it is impossible for citizens and independent scientists to properly evaluate the potential for significant environmental impacts. The only place this can be done is at the specific project level. However, such a review, as normally provided by CEQA, is precluded as per this PEIR.

Depending on a yet-to-be made general checklist to evaluate projects (as indicated in the PEIR) is not a reasonable approach to situations that can be extremely complicated. The California gnatcatcher *(Polioptila californica californica)*, an endangered species in the highly flammable south coast bioregion, provides one example. The species is mentioned only once in the PEIR:

> The California gnatcatcher (*Polioptila californica californica*) and Southern California rufous-crowned Sparrow (*Aimophila ruficeps canescens*) are permanent residents of semi-open sage scrub habitats. These birds avoid dense, overgrown shrublands and so may benefit from treatments that create a better-proportioned mosaic of shrub mixed with open areas. (PEIR 5.5-64)

The PEIR never defines what “dense, overgrown shrublands” are, nor does it cite any references to support this overly broad statement, but the PEIR’s suggestion that treatments “create a better-proportioned mosaic” suggests the intent of habitat manipulation which aligns with Goal 8 of the Program (altering vegetation structure to “improve” wildlife habitat).

If the PEIR had conducted an adequate review of the literature it would have found that, although gnatcatcher reproductive success is higher in younger coastal sage scrub, most gnatcatcher pairs live in coastal sage scrub stands greater than 20 years old (Atwood et al. 2002). The most important result of the research, however, was that population <u>persistence</u> (through a regional population crash) was highest in the oldest stands, which serve as important refugia.

Suggesting that the habitat for the gnatcatcher is potentially open for manipulation is contrary to accepted practice. For example, the USFS Forest Plan Criteria S39 states, “Avoid fuel treatments in coastal sage scrub within the range of the California gnatcatcher, except in Wildland/Urban Interface Defense Zones and on fuelbreaks. (Federal Code 36 CFR 219)

Since the PEIR does not explain where its “fuel treatments” or habitat manipulations will be conducted, we find it difficult how the authors conclude that the Program will cause no significant impacts to the gnatcatcher. More troubling, the PEIR follows up by actually suggesting the clearance of habitat will be a positive in a bioregion subject to more than 200,000 *unspecified* acres of clearing:

> In summary, indirect effects of the VTP in the South Coast Bioregion are likely to be positive for species that occur in open habitats where exotic pest species are unlikely to invade. (PEIR 5.5-65)

Coastal sage scrub habitat is indeed extremely vulnerable to exotic, invasive pest species when disturbed, in the form of non-native grasses (O’Leary 1995, Talluto and Sudling 2008). Ironically, this is something the PEIR recognizes:

> However, gnatcatcher populations are likely to decline if shrub removal treatments result in a conversion of sage scrub to exotic grassland. (PEIR 5.5-64)

Then the PEIR indicates that,

> Treatments shall not remove essential habitat elements of special status taxa know [sic] or likely to occur in the area (Mitigation Method PEIR 5.5.2-11)

How will the BoF determine what is “essential habitat” for the gnatcatcher? This is never indicated. Since coastal sage scrub is one of the dominant plant communities (“fuel” in the parlance of the PEIR) in the south coast bioregion, we don’t know how the BoF will meet the goals of the PEIR without impacting gnatcatcher habitat.

Although contradictory statements and questionable conclusions within the PEIR are a deep concern, the bigger issue addressed here is that in many instances the PEIR fails to acknowledge well known environmental problems. If they had, as in the case of the gnatcatcher, they would have realized and acknowledged the potential for the Program to cause significant impacts.

In a 1997 Memorandum of Understanding (MOU), the US Fish and Wildlife Service (USFWS) agreed to allow the clearance of coastal sage scrub (gnatcatcher habitat) within the 100 foot defensible space zone around structures without the need for a take permit in each instance. In exchange, fire agencies were to report the number of acres cleared annually. Under this agreement, as per section 4(d) of the Endangered Species Act, a maximum cumulative loss of 5% of total gnatcatcher habitat in the county (approx 220,000 acres), or about 745 acres, was allowed due to fire clearance activities. The terms were clarified in an Incidental Take Statement from the USFWS.

Unfortunately, although fire agencies continue to clear vegetation in and around San Diego County, we have found that neither the USFWS nor the various fire authorities have made any effort to comply with the terms set forth in the Incidental Take Statement. In 2009 we issued a Freedom of Information Act request to the USFWS for any documentation relating to the MOU or compliance therewith. The sparse documentation delivered did not include any annual acreage reports and, instead, mostly consisted of internal USFWS correspondence asking why nothing was being done with regard to MOU compliance.

Based on the Program as described in the PEIR, it appears the BoF is proposing clearance operations over and above a level that has likely already exceeded USFWS guidelines.

Since the PEIR does not make clear where fuel treatments will be conducted in the south coast bioregion, nor does it provide the necessary evidentiary documentation to support its assumptions, it’s conclusion that the Program will not cause significant impacts to the gnatcatcher and other sensitive species is highly questionable. We have found similar problems relating to other species throughout the document.

7. Minimized Negative Impacts of Prescribed Fire/Type Conversion

Although the PEIR acknowledges that chaparral can be type converted by too frequent fires, it fails to provide any mitigation to actually prevent it.

The use of prescribed fire during in chaparral, especially when conducted during the cool season, can lead to type conversion (Keeley 2006). It is not an appropriate management strategy for that reason. The suggested mitigation to properly “time” or adjust the “intensity” of a prescribe burn is unrealistic and is only in reference to special status plants, not plant communities.

> Mitigation Measure 5.5.3-1**.** For fire-adapted special status plants, the timing or intensity of prescribed burns shall be adjusted and incorporated into Burn Plan prescriptions to simulate the natural fire regime. The project will be burned in a pattern to create and maintain a mosaic of old and young growth chaparral with diverse habitat structures. (PEIR 5.5-109)

The proper ecological "time" for a fire in chaparral is during the height of the fire season. Chaparral fires are naturally "intense." Attempting to reduce intensity can cause significant negative impacts to the ecosystem, namely type conversion (Keeley and Brennan 2012, Keeley et al. 2011, Keeley et al. 2005).

Regarding the use of prescribed fire to control invasive species, actual experience has demonstrated that with herbaceous weeds, prescribed fire usually does not result in sustainable control unless the program involves repeated burning. For example, the East Bay Regional Parks finds it successful if they burn every year to control yellow star thistle. However, once those treatments are stopped, the target species potentially returns with a vengeance (Alexander and D'Antonio 2003). Some woody species such as brooms may be controlled with a particular fire frequency, but that frequency will be detrimental to many native woody species as well. As a general rule, **reducing fire and other disturbances is likely to do more to restore native systems** than increasing broad scale disturbance, at least in California.

Due to the growing spread of Sahara mustard (*Brassica tournefortii*) in desert regions, the proposed Program has the potential of causing significant negative impacts to thousands of acres in chaparral and transition zones adjacent to, and potentially within, both the Mojave Desert and Anza-Borrego Desert by prescribed fire as well as mastication and herbicide spraying. The resulting denuded and disturbed soils would be highly vulnerable to type conversion into a Sahara mustard monoculture where native habitats are currently at low risk of takeover by this aggressive weed species. Fields of Sahara mustard decimate biodiversity of both native flora and fauna; produce dry, fire-prone landscapes; and eliminate the wildflowers that attract visitors to desert communities. We could not find a reference to this incredibly invasive species in the PEIR.

In regards to impacts of prescribed fire on wildlife, the PEIR appears to dismiss the problem by claiming, "Most shrub-dwelling wildlife will be able to avoid direct mortality by flying away or taking shelter on or under the ground before the fire arrives." (5.5-23)

Most chaparral animals are extremely territorial. They may fly away to "avoid direct mortality," but with their specific territory eliminated and lack of unoccupied territories at the fire edge, it is not unreasonable to assume the expatriated animal will die.

8. Ignored Cumulative Impacts

Another approach the author's use throughout the PEIR to dismiss potentially significant impacts relates to the percentage of the bioregion being "treated."

> Since no more than 0.28% of any life form will be treated annually, bioregion-level effects are expected to be relatively minimal. (PEIR 5.5-65)

We find this kind of thinking not only naive, but disingenuous. It is irrelevant how much of the broad landscape is being treated on an annual basis when there are numerous vegetation communities and specialized habitats found throughout each bioregion that only occupy limited areas. The clearance of the only surviving patch of old-growth chaparral near the town of Pine Valley, as the US Forest Service intended to do in its current Mt. Laguna/Pine Valley HFRA Project in the Cleveland National Forest, cannot be dismissed as insignificant just because it only represents a fraction of the total chaparral in the entire bioregion.

Thinking on a percentage and annual basis also precludes seriously considering the cumulative impacts over time.

The PEIR only considers “treatment” programs conducted by other agencies and timber harvest activities. It does not include the impact of increased fire frequency on ecosystems, such as chaparral, already impacted by such a trend. Such an approach precludes a proper analysis of cumulative effects.

The PEIR’s suggested mitigation measures regarding the spread of invasives that will result when native shrublands type-convert to non-native weedlands due to the Program’s “treatments,” fail to address resulting significant impacts of habitat loss. Cleaning the tires of clearance equipment, making sure the canopy cover of trees (where present) is at least 60% for shade, and informing local groups interested in noxious weed control (PEIR 5.5-112) to prevent the spread of invasives are not adequate.

The PEIR does recommend the “development of project level management measures and implementation methods are necessary to minimize likelihood of type conversion” (6-59), but this is in context of sagebrush steepe plant communities. It also is in alignment with the questionable assumption that underlies the PEIR. Namely, the “encroachment” of junipers due to fire suppression. While there is evidence that fire suppression may have allowed the spread of trees into the steepe, many of the management responses are extremely controversial, such as dragging massive chains across the steepe plant community to rip up junipers and sagebrush for range “improvement.”

To defer a proper plan “to minimize the likelihood of type conversion” to the project level will prevent a proper analysis of the Program’s cumulative effects.

To properly evaluate the cumulative impacts of the Program, the PEIR should have examined the *total* impact of all fire on the landscape, not dismiss such impacts by indicating, among other things, that the average size of its treatments (approx 260 acres) is not big enough to have significant impacts on the region.

For example, the PEIR seems to totally dismiss the potential impact on migratory birds when there is no indication in the proposed Program that clearance operations will not occur between February and September to protect bird nests.

> Significance criteria 1C. Interfere substantially with the movement of any native resident or migratory species or with established native resident or migratory species corridors, or impede the use of native species nursery areas; and permanently alter the habitat value of established wildlife corridors. (PEIR 6-60)
>
> Determination of Significance. *Based on average size of VTP prescribed burn project area (260 acres)*, frequency of occurrence, and expected spatial distribution, the cumulative impact of VTP with other related actions is considered less than significant with adopted implementation and mitigation measures when assessed at the scale of a bioregion. (PEIR 6-65) *Emphasis added.*

Mitigations for cumulative impacts? The standard response in the PEIR is “none required.” We find such findings in complete opposition to standard practices and in violation of the Migratory Bird Treaty Act and California State law. We provide an alternative mitigation measure in appendix I.

The first step in determining the cumulative impact of the proposed Program is to conduct a statewide evaluation of native shrublands and provide a reliable estimate of how many acres have been type converted historically, how much is currently threatened, and what impact the Program, development, increased fire frequency, and climate change may have on existing shrublands. Otherwise, any conclusions relating to the cumulative environmental impacts of a vegetation treatment program will be questionable.

The photo above demonstrates the impacts from one type of “fuel treatment” proposed in the PEIR. A rich, old-growth stand of chaparral in Santa Barbara County is being systematically compromised by clearance activities funded by a local FireSafe chapter. The foreground represents the impact of mastication showing significant soil disturbance. In the background, the longer-term impact of earlier treatments show the invasion and spread of highly flammable, non-native weeds and grasses. This process has increased the ignitability of this area with the addition of flashy fuels.

Additional pictorial examples of habitat clearance projects for the purpose of “treating fuels” can be found in the following albums:

Cuyamaca State Park:
https://plus.google.com/photos/111832478062101189732/albums/5794481180501585377

Cuyamaca State Park II:
https://plus.google.com/photos/111832478062101189732/albums/5795096192589480961

Clearance activities near and within the Los Padres National Forest:
https://plus.google.com/photos/111832478062101189732/albums/5512793492339288961

Clearance projects in the Cleveland National Forest:
https://plus.google.com/photos/111832478062101189732/albums/5444493002476885681

9. Inadequate Alternatives

As per CEQA (15126.6), "An EIR shall describe a range of reasonable alternatives to the project,... which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."

The only alternatives provided in the PEIR are variations on the amounts and types of treatment types used. Also, we reject the conclusion that "no alternative would create a potential increase in wildfire extent/severity..." (PEIR 5.2-14). The spread of invasive grasses that will likely result when shrublands are subject to the Program's "treatments" has been shown not only to increase the potential for ignitions, but to lengthen the fire season (Brooks et al. 2004). The PEIR has not provided any evidence that such a change would not increase wildfire extent, let alone an increase in the number of fires.

To achieve the CEQA requirement, the BoF's primary goal to "enhance the protection of lives, property and natural resources from wildland fire," and to conform to the PEIR's purpose "to analyze the environmental effects of the VTP, to indicate ways to reduce or avoid potential environmental damage resulting from the program, and to identify alternatives to the proposed program," there needs to be a **Wildland-Urban Interface (WUI) alternative.** The WUI alternative would take a comprehensive approach that focuses on *community and regional planning, ignitability of structures, and fuel modifications directly within and around communities at risk.*

There is an abundant amount of scientific research indicating that focusing vegetation treatment, as this PEIR does, as the preferred method to protect lives, property, and the environment from wildland fire is a failed policy. This was made clear during the 2007 Witch Creek Fire, among many others, in which more than 1,100 homes were destroyed and two people were killed. According to a comprehensive study from the Institute for Business and Home Safety (2008), "Wind-blown embers, which can travel one mile or more, were the biggest threat to homes in the Witch Creek Wildfire. There were few, if any, reports of homes burned as a result of direct contact with flames" from wildland fuels.

A much broader study (Syphard et al. 2012) confirmed and expanded upon this finding by examining data on 700,000 addresses in the Santa Monica Mountains and part of San Diego County. The researchers mapped the structures that had burned in those areas between 2001 and 2010, a time of devastating wildfires in the region.

Buildings on steep slopes, in Santa Ana wind corridors, and in low-density developments intermingled with wild lands were the most likely to have burned. **Nearby vegetation was not a big factor in home destruction.**

Looking at vegetation growing within roughly half a mile of structures, the authors concluded that **the exotic grasses that often sprout in areas cleared of native habitat**

like chaparral could be more of a fire hazard than the shrubs. “We ironically found that homes that were surrounded mostly by grass actually ended up burning more than homes with higher fuel volumes like shrubs,” Syphard said.

It is the houses themselves, their location, and the fuels within 120 feet of those houses (including litter in gutters, yard junk, cultivars like palms and acacia, wood piles, etc.), that determines whether the property is vulnerable to fire.

Dr. Jack Cohen (2000), a research scientist with the US Forest Service, has concluded after extensive investigations that home ignitions are not likely unless flames and firebrand ignitions occur within 120 feet of the structure. His findings have shown that,

> …effective fuel modification for reducing potential WUI (wildland/urban interface) fire losses need only occur within a few tens of meters from a home, not hundreds of meters or more from a home. This research indicates that home losses can be effectively reduced by focusing mitigation efforts on the structure and its immediate surroundings (Cohen 1999).

Cohen’s work is consistent with the research on homes with nonflammable roofs conducted by other scientists. During WUI wildland fire events, Foote and Gilless (1996) at Berkeley found an 86 percent home survival rate for homes with a defensible space of 84 feet.

The lack of a WUI alternative is surprising, especially in light of discussions within the Board of Forestry and Fire Protection itself. During a 2005 meeting of the Range Management Advisory Committee (RMAC), participants discussed strategies focused on actual assets at risk rather than landscape level “fuel treatments” of the type the current PEIR is proposing. The following is taken from the minutes of that meeting:

> Jeff Stephens asked to speak to RMAC as the VMP (Vegetation Management Program) Manager versus that of the RMAC Executive Secretary. He outlined three points for consideration by RMAC:
>
> • First, the original goals developed when VMP was created were developed in a different political and environmental climate than what exists today. Rather than eliminate the program perhaps what is needed is a reevaluation of the goals given the politics and environmental concerns of today.
>
> • Second, the VMP has historically been a prescribed fire program. Perhaps what is needed is a program that is more diverse in the type treatments, vegetation types, and circumstances where it may be used. This is a goal of the VMP PEIR.
>
> • Third, when developing recommendations to the Board RMAC may wish to consider the views of some researchers like Jon Keeley, who maintain that the fires that occurred in the south during October 2003 would have occurred regardless of vegetative stand age or structure developed via fuel treatments. This

> is because these fires occur under extreme fire weather events associated with low fuel moisture. **Therefore it is not a good use of resources to perform large landscape fuel reduction projects; rather it is more useful to concentrate efforts near the values to be protected** (RMAC 2005).

We urge the Department of Forestry and CalFire to retract this PEIR and create a **comprehensive program** as referenced above reflecting specific, regional differences, actual assets at risk, and current science without an attempt to exempt its projects from CEQA. In only this way will the state achieve the Program's key goal of preventing loss of lives, reducing fire suppression cost, reducing private property losses and protecting natural resources from devastating wildfire.

As a final note, while the protection of life and property will always be the primary focus of any fire management program, all too often the natural environment is viewed only as a "fuel" that needs to be mitigated, especially shrubland ecosystems. This often leads to decisions on the fire line and during vegetation management activities that have seriously compromised the natural environment. **Valuable natural resources such as old-growth chaparral, intact habitat, and important wildlife corridors need to be seen for what they are, assets at risk.**

Sincerely,

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The California Chaparral Institute is a non-profit science and educational organization dedicated to promoting an understanding of and appreciation for California's shrubland ecosystems, helping the public and government agencies create sustainable, fire safe communities, and encouraging citizens to reconnect with and enjoy their local, natural environments. www.californiachaparral.org.

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APPENDIX I

Migratory birds are perhaps the most highly valued component of North America's biological diversity, with approximately 1,200 species representing nearly 15% of the world's known bird species. The seasonal movement of migratory birds is one of the most complex and compelling dramas in the natural world. Migratory birds embark twice each year on long-distance journeys between their breeding areas and their wintering grounds, which are sometimes separated by thousands of miles. State, federal, and international law all recognize the importance of protecting migratory bird species from harm.

Pursuant to the MBTA, it is unlawful "at any time, by any means or in any manner to . . . take [or] kill . . . any migratory birds, [and] any part, nest, or eggs of any such bird." 16 U.S.C. § 703(a). This prohibition applies to federal agencies and their employees and contractors who may not intend to kill migratory birds but nonetheless take actions that result in the death of protected birds or their nests. *Humane Soc'y of the United States v. Glickman*, 217 F. 3d 882 (D.C. Cir. 2000) (holding that federal agencies are required to obtain a take permit from FWS prior to implementing any project that will result in take of migratory birds); see also *Robertson v. Seattle Audubon Soc'y*, 503 U.S. 429, 437–38 (1992) (finding that federal agencies have obligations under the MBTA) and *Center for Biological Diversity v. Pirie* (191 F.Supp.2d 161 (D.D.C. 2002) (allowing injunctive relief against federal agencies for violations of the MBTA). The prohibition on "take" of migratory birds includes destruction of nests during breeding season. Specifically, "nest destruction that results in the unpermitted take of migratory birds or their eggs, is illegal and fully prosecutable under the MBTA." U.S. Fish and Wildlife Service, Migratory Bird Permit Memorandum, from Director Steve Williams dated April 15, 2003.

In a *Memorandum of Understanding Between the U.S. Department of Agriculture Forest Service and the U.S. Fish and Wildlife Service to Promote the Conservation of Migratory Birds* ("MOU"), the agencies identified specific actions that, if implemented, would contribute to the conservation of migratory birds and their habitats. The MOU requires the Forest Service to alter the season of activities to minimize disturbances during the breeding season, to coordinate with the appropriate FWS Ecological Services office when planning projects that could affect migratory bird populations, and to follow all migratory bird permitting requirements. Importantly, the MOU "does not remove the Parties' legal requirements under the MBTA, BGEPA, or other statutes and does not authorize the take of migratory birds," (emphasis added).

Under the MBTA, "any person, association, partnership, or corporation" who violates the MBTA or regulations thereunder are subject to criminal and civil penalties. 16 U.S.C. §707. Violations of the MBTA are prosecuted as a misdemeanor, and upon conviction thereof, are subject to fines of up to $15,000 or imprisonment of up to six months, or both. *Id.*

Requirements of the California Fish & Game Code

In addition to the protections afforded by the federal MBTA and outlined above, several bird species within the project area are also protected under state law. Specifically, "[i]t is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird," and "it is unlawful to take or possess a migratory nongame bird." *See* Cal. Fish & Game Code §§ 3503, 3513.

To mitigate the potential take of migratory bird nests, we recommend that the following mitigation measure be implemented for all vegetation clearing projects:

Source: Southern California Association of Governments. 2012. Final Programmatic Environmental Impact Report for the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), Appendix G: Examples of Measures that Could Reduce Impacts from Planning, Development and Transportation Projects.

BIO/OS34: Project sponsors may ensure that suitable nesting sites for migratory nongame native bird species protected under the Federal Migratory Bird Treaty Act and/or trees with unoccupied raptor nests (large stick nests or cavities) may only be removed prior to February 1, or following the nesting season.

A survey to identify active raptor and other migratory nongame bird nests may be conducted by a qualified biologist at least two weeks before the start of construction at project sites from February 1st through August 31st. Any active non-raptor nests identified within the project area or within 300 feet of the project area may be marked with a 300-foot buffer, and the buffer area may need to be avoided by construction activities until a qualified biologist determines that the chicks have fledged. Active raptor nests within the project area or within 500 feet of the project area may be marked with a 500-foot buffer and the buffer avoided until a qualified biologist determines that the chicks have fledged. If the 300-foot buffer for non-raptor nests or 500-foot buffer for raptor nests cannot be avoided during construction of the project, the project sponsor may retain a qualified biologist to monitor the nests on a daily basis during construction to ensure that the nests do not fail as the result of noise generated by the construction. The biological monitor may be authorized to halt construction if the construction activities cause negative effects, such as the adults abandoning the nest or chicks falling from the nest.

- Beginning thirty days prior to the disturbance of suitable nesting habitat, the project sponsor may arrange for weekly bird surveys conducted by a qualified biologist with experience in conducting breeding bird surveys to detect protected native birds occurring in the habitat that is to be removed and any other such habitat within 300 feet of the construction work area (within 500 feet for raptors) as access to adjacent areas allows. The last survey may be conducted no more than 3 days prior to the initiation of clearance/construction work.

- If an active raptor nest is found within 500 feet of the project or nesting habitat for a protected native bird is found within 300 feet of the project a determination may be made by a qualified biologist in consultation with CDFG whether or not project construction work will impact the active nest or disrupt reproductive behavior.

- If it is determined that construction will not impact an active nest or disrupt breeding behavior, construction will proceed without any restriction or mitigation measure. If it is determined that construction will impact an active raptor nest or disrupt reproductive behavior then avoidance is the only mitigation available. Construction may be delayed within 300 feet of such a nest (within 500 feet for raptor nests), until August 31 or as determined by CDFG, until the adults and/or young of the year are no longer reliant on the nest site for survival and when there is no evidence of a second attempt at nesting as determined by a qualified biologist. Limits of construction to avoid a nest may be established in the field with flagging and stakes or construction fencing marking the protected area 300 feet (or 500 feet) from the nest. Construction personnel may be instructed on the sensitivity of the area.

- Documentation to record compliance with applicable State and Federal laws pertaining to the protection of native birds may be recorded.

CALIFORNIA
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...the voice of the chaparral

February 25, 2013

Board of Forestry and Fire Protection
Attn: George Gentry
Executive Officer
VegetationTreatment@fire.ca.gov
Sacramento, CA 94244-2460

Re: ADDENDUM to our January 25, 2013 comment letter on the Draft Program EIR (PEIR) for the Vegetation Treatment Program

Dear Mr. Gentry and Board Members,

Type conversion of native shrublands, the purpose of a Program EIR, and land planning were issues we addressed in our original letter of January 25, 2013. We would like to expand on these matters here. In addition, we are submitting a large number of exhibits for the administrative record including:

1. A petition with 3,080 signatures and comments requesting that the Board of Forestry retract its PEIR and to work with the California Natural Resources Agency and the Senate Committee on Natural Resources and Water to create a Comprehensive Fire Protection Program**.**

2. Scientific papers cited in this and our January 25, 2013 letter.

3. Our 2005 comment letter to Cal Fire on the NOP regarding the Vegetation Management Program DEIR identifying the need to incorporate current science into its planning process and to avoid using forest-based models when managing other ecosystems.

Type Conversion

As stated in our January 25, 2013 letter, contrary to statements in the PEIR, US Forest Service research has shown that most shrubland ecosystems within the four National Forests in southern California have **negative** departures from historical fire patterns, meaning the native shrublands are being threatened by too much fire as opposed to not enough. Based on this analysis, it is a fair assumption that many other native shrublands in State Responsibility Areas are being threatened by too much fire as well, and hence

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type conversion. We have included US Forest Service research maps at the end of this letter showing these negative departures (In our previous letter we mistakenly termed negative departure as positive).

Program EIR: General

A regulation enacted under CEQA, Title 14 of Cal. Code of Regulations (CEQA Guidelines) § 15168 defines a "Program EIR," its uses, and whether a Program EIR can eliminate the need for further CEQA documents for site-specific projects (either "tiered EIRs" or "negative declarations") as follows:

> (a) **General**. *A program EIR is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either*:
>
> (1) *Geographically,*
>
> (2) *As logical parts in the chain of contemplated actions*,
>
> (3) *In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program*, or
>
> (4) *As individual activities carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar way*s. (Italics added)

The PEIR fails to meet these criteria for a program EIR.

We find that since the 38 million acres targeted by the PEIR are neither geographically (1) nor ecologically similar, it is impossible for the Board to conclude as it does in the PEIR that *the individual activities carried out* under its authority in the Program will have *similar environmental effects* which *can be mitigated in similar ways* (4). This is especially true since the PEIR was dominated by forest-based research, some of which was misinterpreted and misquoted, and fails to address specific regional differences in ecosystem type, biodiversity, and wildland-urban interface issues.

We also find the huge, 500% expansion of Cal Fire's previous Vegetation Management that this PEIR proposes does not qualify as *a continuing program* (3). The massive area proposed for treatments requires an entirely different analysis as explained in our previous letter.

And finally, the projects the PEIR are proposing occur in so many different ecosystems with so many different variables, that considering them *as logical parts of contemplated actions* (2) is equivalent to classifying developments on flood plains, earthquake faults, and along the coastal zone as exempt from independent review because they all involve housing subdivisions.

In addition, the CEQA guidelines state,

> (5) A program EIR will be most helpful in dealing with subsequent activities if it *deals with the effects of the program as specifically and comprehensively as possible*. With a good and detailed analysis of the program, many subsequent activities could be found to be within the scope of the project described in the program EIR, and no further environmental documents would be required. (Italics added)

We find the PEIR fails to meet this standard of dealing *with the effects of the program as specifically and comprehensively as possible* as explained in our previous letter.

Program EIR: Details

A treatise on CEQA, Remy, Thomas, Moose & Manley, Guide To CEQA (11th ed. 2007) (Guide To CEQA), discusses Program EIRs. They state that Program EIRs can serve an important function by,

> "*. . . providing a single environmental document that can allow an agency to carry out an entire 'program' without having to prepare additional site-specific EIRs or negative declarations.* To effectively serve this second function, a program EIR must be very detailed; in other words, *it must include enough site-specific information to allow an agency to plausibly conclude that, in analyzing 'the big picture,' the document also addressed enough details to allow an agency to make informed site-specific decisions within the program*. (Guide To CEQA, pp. 637-638; italics added)

The Board's PEIR does not contain site-specific information, and hence has failed this standard. It appears then that the Board is depending on the second step of environmental analysis, that is, to go through a "written checklist" to determine if the significant environmental impacts of a site-specific project have been evaluated in the Program EIR. Since the PEIR has failed to do this, then the Board is required to prepare site-specific "tiered" EIRs or negative declarations (The factors that a lead agency must examine in the written checklist are set forth in Public Resources Code § 15162).

There are no checklists within the PEIR specific to each plant community and region the Program will be treating. Therefore, it is impossible to properly evaluate the Program's impacts.

In addition,

> . . . (*T*)*he authors believe that a lead agency should clearly inform the public whether future CEQA documentations are anticipated.* Such information will

> affect the manner in which people review and criticize the ‘first tier’ EIR . . .” (Guide To CEQA, p. 638; italics added)

The PEIR has not done this.

After setting forth the definition of a “program” set forth in CEQA Guidelines § 15168(a), the Remy et al Guide To CEQA provides

> . . . **What is a ‘Program’?**
>
> . . . The use of a program EIR allows a lead agency ‘to characterize the overall program as the project being approved at the time.’ . . . (A) program EIR acts as an analytical superstructure for subsequent more detailed analysis. *The program EIR should identify those probable environmental effects that can be identified.* For those impacts that cannot be predicted without undue speculation or for which the deferral of specific analysis is appropriate, the agency can defer such analysis until later points in the program approval or implementation process. . . . Subsequent EIRs need only focus on new effects that have not been considered before. . . .” (Guide To CEQA, pp. 638-639; italics added)
>
> . . . (F)or a program EIR to allow an agency to dispense with additional EIRs or negative declarations for later site-specific projects, the program document must be at once both comprehensive and specific. It must concentrate on a project’s long-term ‘cumulative’ impacts, but must also contain enough details to anticipate ‘many subsequent activities within the scope of the project.’ CEQA Guidelines, § 15168, subd. (c)(5). . . .” (Guide To CEQA at p. 639)

For the reasons stated in our previous letter, the PEIR has failed to properly *identify those probable environmental effects that can be identified.* Specifically, the PEIR’s cursory treatment of shrubland type conversion that can certainly be identified, the cumulative impacts of such a change on ecosystem health and diversity that are ignored, and its flawed, forest-based analysis of the entire state, are all significant and fatal flaws in the PEIR.

Poor Preparation

List of Preparers and Individuals/Organizations consulted in preparation for the PEIR is almost exclusively dominated by northern California, forest-based consultants and Cal Fire staff. Only one outside agency scientist who has had significant involvement in fire research over the past decade involving Southern California was included (Geographer P.W. Wohlgemuth with the USFS Riverside Fire Lab). We find this especially odd since the Board is involved with the California Fire Science Consortium which is focused on exchanging and distributing knowledge concerning the most recent research in fire science.

As a consequence, we are asking the Board the following questions concerning the preparation of the PEIR:

1. How were consultants for the PEIR selected?

2. Why did the Board not include well known scientists familiar with shrubland-based ecosystems, especially those in southern California?

3. Why did the Board exclude important conservation groups who the Board knows have been extremely active in commenting on fire management issues in California (such as the California Native Plant Society and the California Chaparral Institute)?

4. How were the citations in the PEIR vetted to ensure they were relevant to the statements and conclusions made in the PEIR?

5. Why is there a lack of shrubland-based citations and applications in the PEIR when the majority of the most damaging fires in California have occurred in shrubland ecosystems?

6. Why did the Board only provide alternatives focused on vegetation treatment rather than more comprehensive approaches of the type suggested in our January 25, 2013 comment letter?

7. How does the Board intend to use the comments being submitted about the PEIR? We ask this question because while CEQA indicates that "an EIR should summarize the main points of disagreement among the experts," we are hoping the Board will not merely attach submitted comments to satisfy this requirement. We are hoping the Board will actually *use* the submitted comments to develop a more comprehensive fire management program. Such use is true to the intent of CEQA.

Land Planning

We mention the importance of land planning in reducing wildand fire risk in our prior letter. We wanted to provide additional research that affirms the importance of providing a **Wildland-Urban Interface (WUI) alternative** to the Board's proposed Program as we offered in our January 25, 2013 letter.

After examining housing that borders public forestlands in the West, Gude et al. (2008) concluded,

> Most importantly, national, state, and local policies that address **wildland fuels management need to be coupled with policies that address existing and future development in fire-prone private lands.** (Emphasis added).

In a follow-up, comprehensive examination of wildfire suppression costs in the Sierra Nevada area of California, Gude et al. (2013) concluded,

> In light of mounting evidence that increases in housing lead to increases in fire suppression costs, future policies aimed at addressing the rising costs should attempt to either reduce or cover the additional costs due to future home development. **To ignore homes in future wildfire policies is to ignore one of the few determinants of wildfire suppression cost that can be controlled.** For example, governments have limited ability to control factors such as weather and the terrain in which wildfires burn.
>
> **The most obvious means of reducing additional suppression costs due to future home development would be to limit future home development in wildfire prone areas.** Based on our findings, future savings may be achieved by a combination of policies that aim to keep undeveloped land undeveloped and encourage new development within existing urban growth boundaries and existing subdivisions. (Emphasis added)

Failure to Incorporate Comments

According to the PEIR,

> All scoping comments received by the Department in response to its earlier NOP have been incorporated by the Board as a part of the scoping for the Vegetation Treatment Program EIR proposed herein. (PEIR 9-1)

We are not sure what the Board means by "incorporated," but we have found that prior comments provided by us to the Board appear to have been generally ignored.

For example, in our 2005 comment letter concerning the NOP we wrote,

> ... much of what is within the California Fire Plan tends to treat different types of fuels with the same broad brush, "one-size-fits-all" approach, failing not only to recognize the distinct differences between forest and chaparral, but also the important differences within chaparral types themselves. These differences have important fire management implications that need to be addressed. Not doing so will dramatically reduce the effectiveness of our state's fire management efforts."

Our January 25, 2013 comment letter repeats the same point:

> The one-size-fits-all approach the PEIR takes regarding fire suppression is not scientifically supportable and raises serious questions about the PEIR's conclusions. For shrubland ecosystems, which have completely different fire regimes and responses to management than forests, there were less than a dozen

peer-reviewed papers referenced (out of nearly 1,000 literature citations) relating directly to fire.

The need to appropriately address and incorporate the different fire regimes of coniferous forest vs. chaparral and other ecosystems into the Program's vegetation treatment prescriptions is a substantial issue that was raised during the scoping process in 2005, and one that still remains inadequately addressed in the PEIR.

We urge the Board to take advantage of the the wealth of information available from independent scientists, conservation organizations, and private citizens who care deeply about California and use it to shape its future policy documents and fire management programs.

Sincerely,

Richard W. Halsey
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Justin Augustine
Attorney
Center for Biological Diversity

The California Chaparral Institute is a non-profit science and educational organization dedicated to promoting an understanding of and appreciation for California's shrubland ecosystems, helping the public and government agencies create sustainable, fire safe communities, and encouraging citizens to reconnect with and enjoy their local, natural environments. www.californiachaparral.org

The Center for Biological Diversity is a 501(c)3 nonprofit conservation organization with more than 450,000 members and online activists dedicated to the protection of endangered species and wild places. www.biologicaldiversity.org

New signatories to our letter:

Claudia Foster
Richard Foster
Board of Directors
Del Dios Volunteer Fire Department

Richard Foster
President
Del Dios Mutual Water Company

Terry Frewin
Chair
Sierra Club California/Nevada Desert Committee
Santa Barbara, CA

Las Virgenes Homeowners Federation
Kim Lamorie, president
Mary Ellen Strote, vice president
Kathy Berkowitz, secretary
Joan Yacovone, treasurer

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Prior signatories

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The Escondido Creek Conservancy

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Orange County Group Executive Committee
Sierra Club, Angeles Chapter

Monica Bond, Principal Scientist
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Sierra Club

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Tubb Canyon Desert Conservancy

George Hague
Co-Chair
Santa Ana Mountains Task Force
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Tom Hopkins, President
Ventana Wilderness Alliance
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Greg McMillian, Chair
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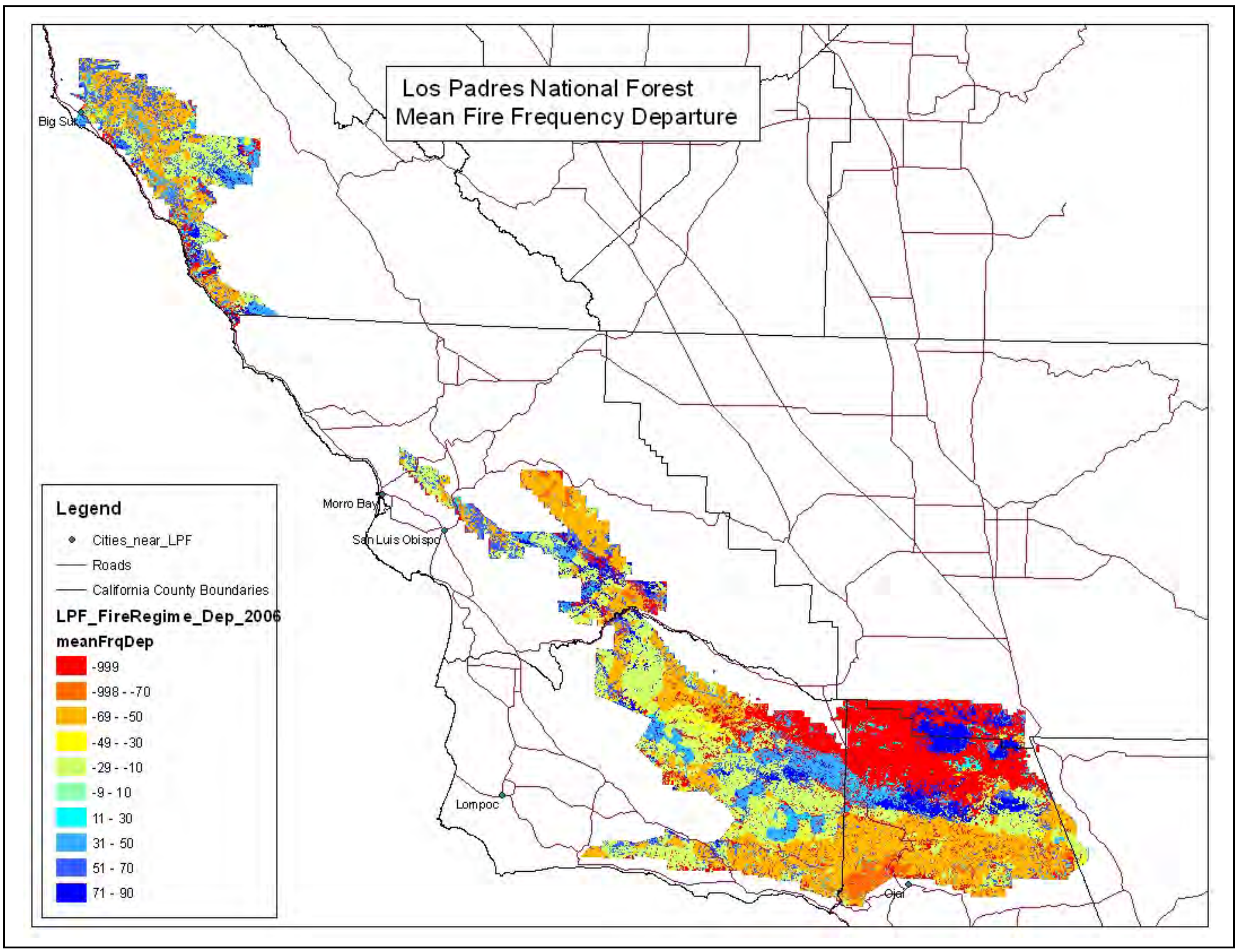
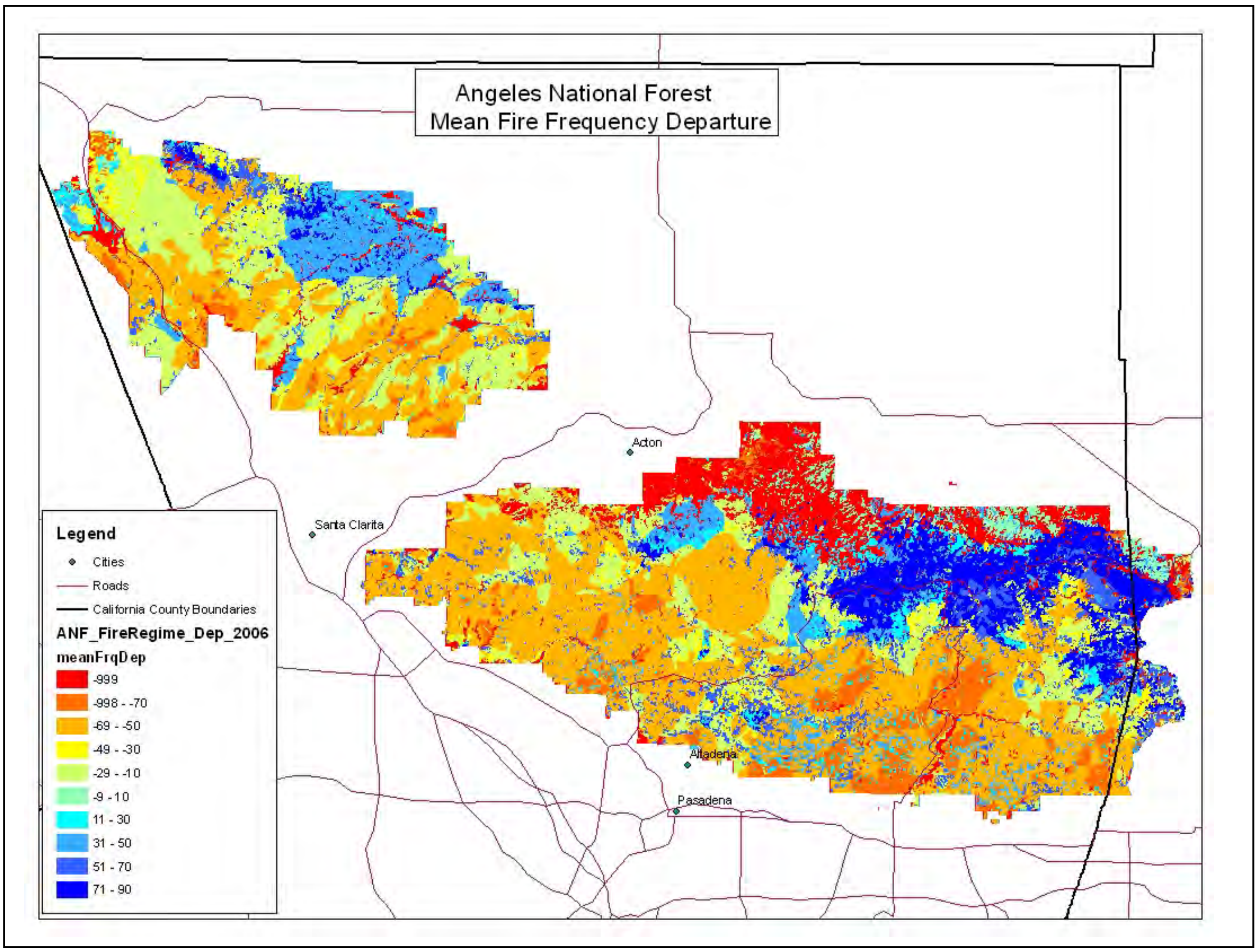
Los Padres National Forest Mean Fire Frequency Departure Map
Hot colors represent negative departures (more fire than historical)
Cool colors represent positive departures (less fire than historical)

From Safford, H. D. and D. Schmidt. 2008. Fire departure maps for southern California national forests. USDA Forest Service and The Nature Conservancy.



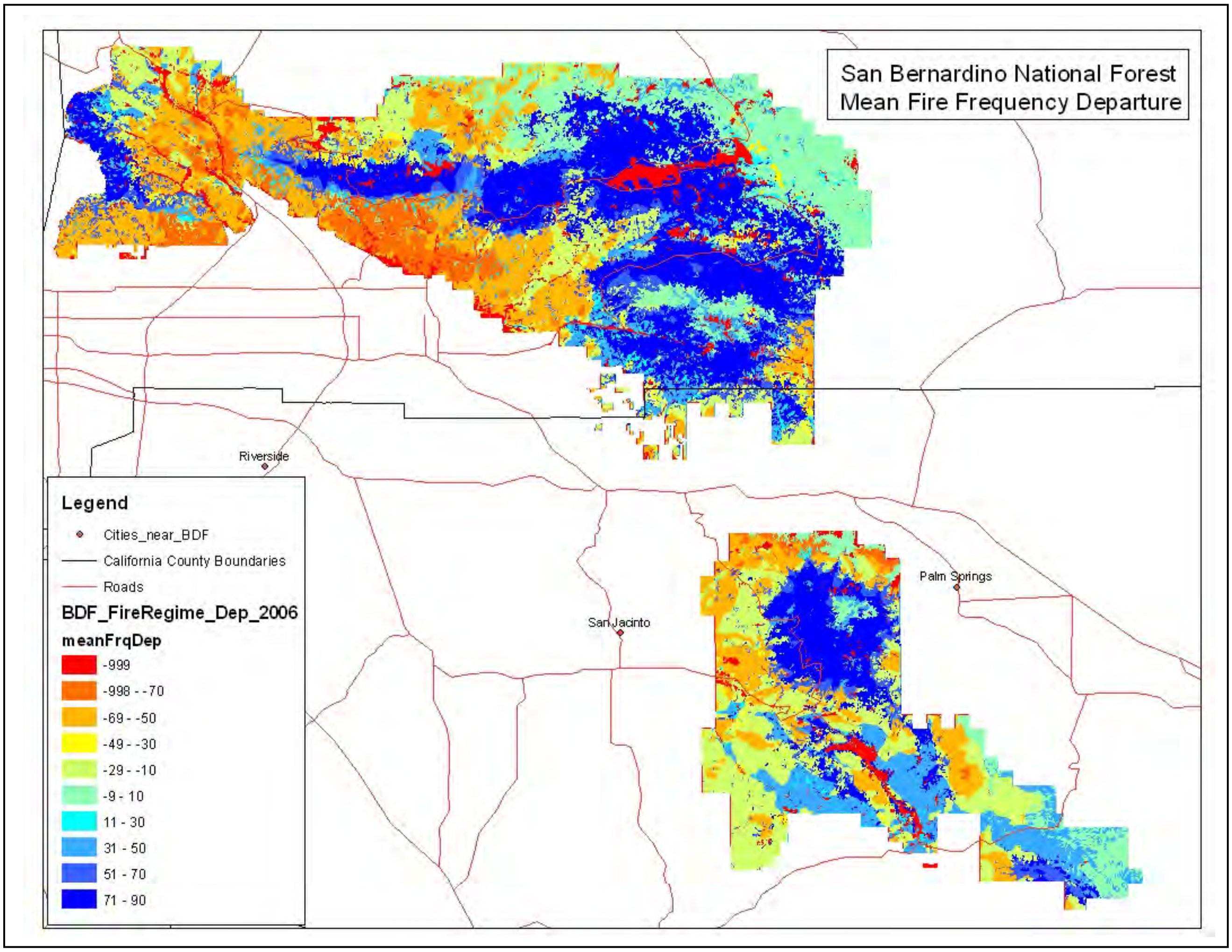
Angeles National Forest Mean Fire Frequency Departure Map
Hot colors represent negative departures (more fire than historical)
Cool colors represent positive departures (less fire than historical)

From Safford, H. D. and D. Schmidt. 2008. Fire departure maps for southern California national forests. USDA Forest Service and The Nature Conservancy.



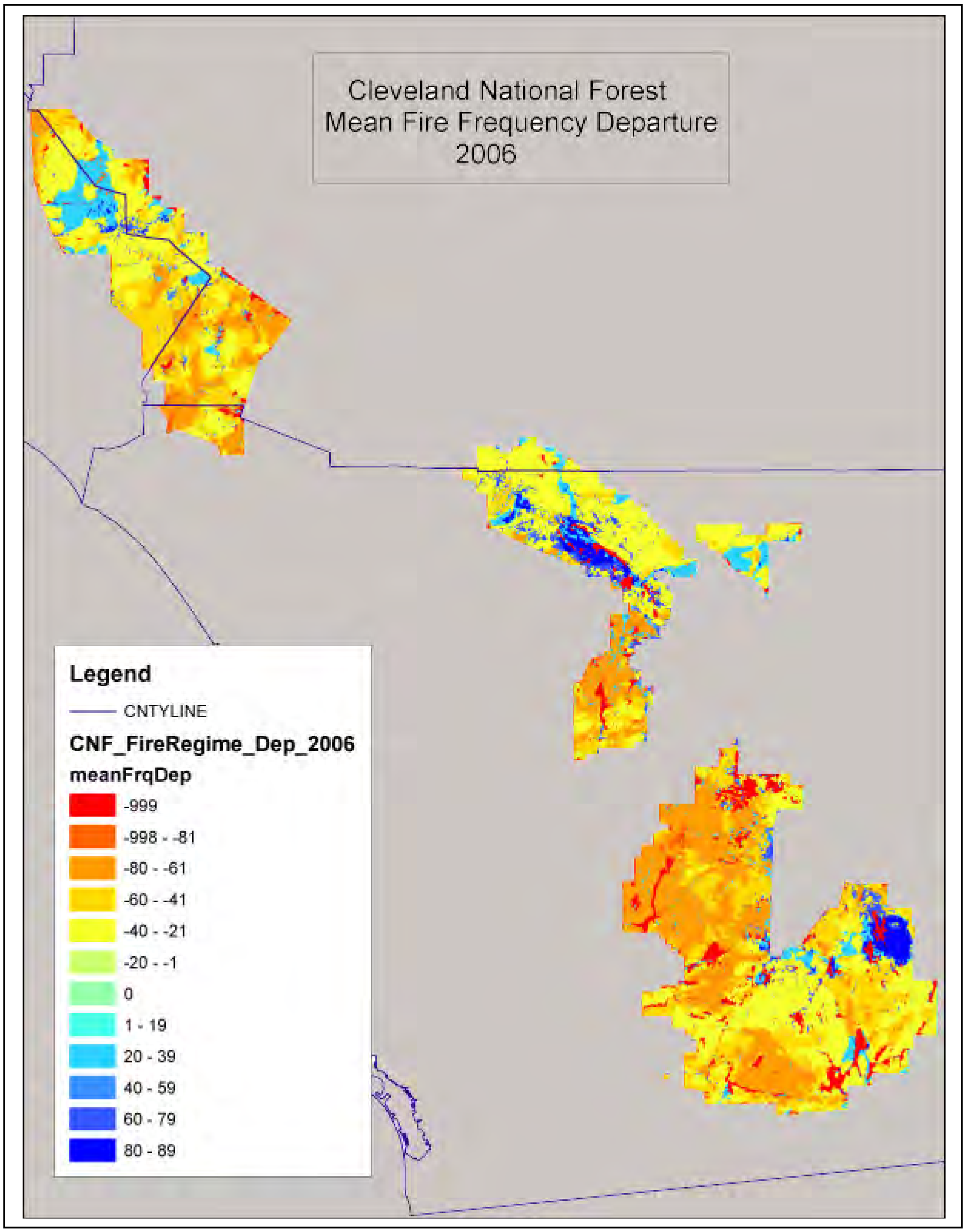
San Bernardino National Forest Mean Fire Frequency Departure Map
Hot colors represent negative departures (more fire than historical)
Cool colors represent positive departures (less fire than historical)

From Safford, H. D. and D. Schmidt. 2008. Fire departure maps for southern California national forests. USDA Forest Service and The Nature Conservancy.



Los Padres National Forest Mean Fire Frequency Departure Map
Hot colors represent negative departures (more fire than historical)
Cool colors represent positive departures (less fire than historical)

From Safford, H. D. and D. Schmidt. 2008. Fire departure maps for southern California national forests. USDA Forest Service and The Nature Conservancy.



CALIFORNIA CHAPARRAL INSTITUTE
...the voice of the chaparral

April 8, 2013

Board of Forestry and Fire Protection
Attn: George Gentry
Executive Officer
VegetationTreatment@fire.ca.gov
Sacramento, CA 94244-2460

Re: CCI 3rd comment letter on the Draft Program EIR (PEIR) for the Vegetation Treatment Program

Dear Mr. Gentry and Board Members,

In this, our final comment letter on the PEIR, we would like to submit some questions relating to the PEIR document and the proposed Program.

A False Dichotomy

The primary question we have always asked about vegetation treatment projects in native shrubland ecosystems is why, if the science concerning the efficacy of such an approach is mixed at best, are vegetation treatments the default response to the threat of wildland fire?

This default response was illustrated in a San Diego Union-Tribune article on April 5, 2013, when it quoted Mr. Gentry as saying,

> *People have to expect one of two things. They're going to have to expect a large-scale fire that San Diego has already seen or they're going to have to accept some form of treatment to help mitigate those large-scale fires. That's the choices we're basically faced with.*

This is a false dichotomy. When the science has clearly shown that the best way to protect lives and property from wildland fire is through a combination of fire safe community planning, fire safe structures, and appropriate defensible space, the choices offered by the Board of Forestry and the PEIR do not reflect what we know. Spending millions of dollars on clearing habitat is not an effective use of fire management resources. The research is conclusive on the inadequacy of focusing exclusively on vegetation treatments:

> "Wind-blown embers, which can travel one mile or more, were the biggest threat to homes in the Witch Creek Wildfire. **There were few, if any, reports of homes burned as a result of direct contact with flames" from wildland fuels.**
> - Institute for Business and Home Safety 2008

and,

> Examining data on 700,000 addresses in southern California it was found that buildings on steep slopes, in Santa Ana wind corridors, and in low-density developments intermingled with wild lands, were the most likely to have burned between 2001 and 2010. **Nearby vegetation was not a big factor in home destruction. Exotic grasses that often sprout in areas cleared of native habitat like chaparral could be more of a fire hazard than the shrubs.**
> - Alexandra D. Syphard et al. 2012

and finally,

> …effective fuel modification for reducing potential WUI (wildland/urban interface) fire losses need only occur within a few tens of meters from a home, not hundreds of meters or more from a home. This research indicates that **home losses can be effectively reduced by focusing mitigation efforts on the structure and its immediate surroundings.**
> - Jack Cohen 1999

The Board's assumption appears to be that the *attempted mitigation* of large-scale wildland fires through vegetation treatment is the main goal in and of itself, rather than the actual protection of life and property. The one goal out of nine in the PEIR that does address protecting life and property is stated in a way that precludes any alternatives to vegetation treatment projects.

> *2. Modify wildland fire behavior to help reduce catastrophic losses to life and property consistent with public expectation for fire protection.*

Changing the Question

We suggest an alternative way of looking at the fire environment so that all the knowledge we have concerning wildland fire risk reduction is utilized. The Board of Forestry needs to ask itself,

How can we protect lives and property from wildland fire,
rather than,
How can we try to stop wildland fires?

In light of the two very different approaches these two questions can produce, we respectfully ask the Board to provide the public answers to the following as they apply to the PEIR:

1. Why has the Board of Forestry not taken a more comprehensive approach to fire risk reduction (by including all factors known to reduce the loss of lives and property during wildland fires), and instead focused exclusively on vegetation treatment in the PEIR?

2. Considering that the Board's mandate is focused on forests, forestry, and forest fires, that the majority of the Board's members are associated with forestry, that the PEIR is a forest-based document, and that the PEIR preparers' expertise is primarily in forested ecosystems, how did the Board adjust its approach in the PEIR to reducing the threat of wildand fire in non-forested ecosystems such as chaparral where most of the damaging fires occur?

3. The Board has claimed that there will be local input into the planning of individual vegetation treatment projects. However, if the PEIR is certified, the ability of citizens to challenge a project under the California Environmental Quality Act will be eliminated. If citizens believe a project approved by the Board and/or Cal Fire will cause significant environmental damage, what recourse will citizens have to challenge such a project?

4. In light of the data presented in the three studies cited above, Institute for Business and Home Safety (2008), Syphard et al. (2012), and Cohen (1999), what scientific rationale does the Board use to focus exclusively on vegetation treatment to reduce the loss of life and property from wildland fire, especially in southern California? We could find no such rationale in the PEIR.

5. What role, if any, did the economic incentive of federal grant dollars or other monies available for vegetation treatments play in the PEIR's exclusive focus on vegetation treatment?

6. It was impossible to determine from the PEIR how much of the proposed program would be involving vegetation treatments on private ranch and farm land that would provide economic benefits to the owners of such lands. Would the Board please identify such projects if any exist?

Without changing the question as mentioned above, the Board of Forestry will continue to support a policy that has consistently failed to protect communities from wildland fire over the past one hundred years. It's time we start focusing on what we actually want to accomplish rather than supporting an approach that requires continual expenditures year after year on habitat clearance projects.

Plants grow back. In contrast, fire safe land planning and fire safe communities provide self-sustaining, long term solutions that do not require constant government expenditures to maintain.

Again, we urge the Board and the State of California to retract the current PEIR and instead deal with wildfire threats in a **collaborative**, science-based manner, involving all stakeholders and tailored to the wildly variable environments of California, that focuses on what really matters: lives, property, and the natural environment.

Sincerely,

Richard W. Halsey
Director
California Chaparral Institute
rwh@californiachaparral.org

The California Chaparral Institute is a non-profit science and educational organization dedicated to promoting an understanding of and appreciation for California's shrubland ecosystems, helping the public and government agencies create sustainable, fire safe communities, and encouraging citizens to reconnect with and enjoy their local, natural environments. www.californiachaparral.org

Cited References

Cohen, J.D. 1999. Reducing the wildland fire threat to homes: where and how much? USDA Forest Service Gen. Tech. Report PSW-GTR-173, pp 189-195.

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Syphard, A.D., J.E. Keeley, A. Bar Massada, T.J. Brennan, V.C. Radeloff. 2012. Housing arrangement and location determine the likelihood of housing loss due to wildfire. PLoS ONE 7(3): e33954. doi: 10.1371/journal.pone.0033954.

CALIFORNIA CHAPARRAL INSTITUTE
...the voice of the chaparral

May 7, 2013

Board of Forestry and Fire Protection
Resource Protection Committee
Attn: George Gentry
Executive Officer
VegetationTreatment@fire.ca.gov
Sacramento, CA 94244-2460

Re: Collaboration on the PEIR for the Vegetation Treatment Program (VTP)

Dear Mr. Gentry and Board Members,

We respectfully request that the Resource Protection Committee discuss a proactive proposal at today's meeting: invite members of the environmental and fire science communities who submitted detailed comment letters critical of the Draft PEIR to participate in a collaborative process to assist the Board in shaping a successful VTP.

Although there are distinct differences in how each of us would achieve the VTP's objectives, we all agree in the common goal of protecting life, property, and natural resources from wildland fire. As such, we believe by working together, we can develop a viable program that will gain the support of those who have voiced strong opposition to the current approach.

Such a collaborative effort is the preferable option.

We look forward to your positive response.

Sincerely,

Richard W. Halsey
Director
California Chaparral Institute
rwh@californiachaparral.org

CALIFORNIA CHAPARRAL INSTITUTE
...the voice of the chaparral

California Native Plant Society

October 27, 2015

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Board Analyst
Email: VegetationTreatment@bof.ca.gov

Re: Vegetation Treatment Program (VTP)

Dear Ms. Hannigan and Board Members,

We have been contributing to the development of a new Vegetation Management Program since 2005.

While we believe the current draft being developed is a vast improvement over previous attempts, it still contains significant contradictions and scientifically unsupportable statements that compromise the achievement of our common goal: protecting life, property, and the natural environment from wildland fire.

Thank you for the opportunity to provide the following comments and recommendations.

1. Ecological Restoration/resource goals
There are very few ecological communities or resource values that can be improved with the sorts of treatments the current Draft EIR proposes, with the exception of some mid-elevation (under 7,000 feet), mixed coniferous and pine forests where past logging, over grazing, and fire suppression have had impacts and altered ecological conditions outside the natural range of variability. Solid scientific justification, by experts in ecology and restoration, must be required for any project purporting to further natural resource goals.

2. Acres Treated rather than need
Project justification still appears to be based more on acreage quotas rather than actual need. The Draft EIR should ensure a “project justification process” that starts with a clear need to reduce risks, rather than the attainment of a certain number of treated acres. The 2013 San Felipe Valley prescribed burn provides an example of why this issue needs to be clearly addressed. Not only were the justifications for the project invalid, but the ecological damage caused by the burn’s escape was significant. Details on this escaped burn can be found on the Chaparral Institute’s website here:
http://www.californiachaparral.org/threatstochaparral/dprescribedfire.html

3. Citizen Oversight lacking within the WUI

Although the Draft EIR attempts to cover this issue with Objective #5 and indicating that the "Unit/Contract County CEQA Coordinators would seek public input and engage with stakeholders," such engagement is not spelled out other than saying the local Units will be doing it. What will the exact role be for interested stakeholders? Will they be able to see how their influence is reflected in the final plan? After the plan is finalized, is there a mechanism that will allow stakeholders to provide additional input or to object?

The Draft EIR also states that, "Each vegetation treatment project proposed would require the preparation of a Project Scale Analysis (PSA) that would document the project's consistency with the requirements and findings of this Program EIR."

However, we could not find any opportunity for the public at large to review these PSAs unless the project falls outside the 1.5 mile wide WUI. The Draft EIR dismisses concerns that this is too large an area because Cal Fire staff heard USFS representatives on the Cleveland National Forest suggested a 6-mile-wide WUI buffer (4-30). We consider this inadequate support for one of the fundamental principles that is apparently guiding the document.

The explanation as to why the 1.5-mile-wide WUI is necessary is based on the approximate distance embers can be carried from the fire front (4-29). We suggest the Board refer to USFS scientist Jack Cohen's work. His conclusions do not support such a rationale.

4. Public Meetings for projects outside the WUI?

The Draft PEIR says the "project proponent" will provide a public meeting for projects outside the WUI. What role will Cal Fire play in making sure a meeting will occur, how it will be organized, and how comments made during the public meeting will be (or not) considered. The document also does not make clear how much State Responsibility Area is actually outside the 1.5 mile wide WUI that would require a public meeting (2-46).

To satisfy the goal of full transparency, CalFire needs to maintain a **CEQA type website that lists the proposed projects** in each Unit, a general description, and the date of any stakeholder meeting, including those projects on state parks/CA Fish and Wildlife lands (2-46).

5. High-severity fire - all forests are not the same

One of the Draft EIR's key program objectives is to reduce the potential for high-severity fire within "appropriate vegetation types" (2-8). The document appears to mean "many forests in California" and only cites Thomas Bonnicksen's political testimony to Congress in 2003 to support this objective.

The document states,

"Coniferous forests in California have long been subject to frequent low-intensity fires, which played an important role in reducing hazardous fuels and maintaining ecosystem processes." (2-9)

The Draft EIR makes no distinctions for forest types. Presumably projects could thin lodgepole pine forests that do not have unnaturally high vegetation build-ups because they have natural fire return intervals over 100 years.

6. Contradictions concerning the chaparral fire regime
Although the Draft EIR recognizes the chaparral's natural fire regime as being characterized by infrequent, high-intensity fires, the author's later contradict themselves.

For example, the document first correctly indicates that chaparral species are lost at short fire return intervals (immaturity risk), then reverses itself by incorrectly stating that chaparral is resilient to short fire return intervals.

"*Over time, instances of the loss or significant reduction of species that were victims of immaturity risk began to accumulate. In addition, the study of chaparral ecosystems began to reveal that chaparral,* ***in addition to being resilient to fire at shorter intervals****, was also resilient to fire at long intervals (Sampson, 1944; Horton and Kraebel, 1955)."* (4-12)

Later in the document, after again recognizing the problems with short fire return intervals in chaparral, the document suggests that science may yet find that short fire returns are not a problem by misrepresenting Keith Lombardo's research (2009).

"... chaparral does not need more fire, it needs less (Safford and Van de Water, 2014). However, new scientific information could modify that conclusion in the future as it becomes available. For example tree-ring data collected by Lombardo et al. (2009) in bigcone Douglas-fir stands surrounded by chaparral indicate that both extensive and ***smaller fires were present in historical time****."*(4-14)

We are attaching the statement from Dr. Lombardo that we also submitted during the August, 2015, Board of Forestry meeting that makes clear his research was being misrepresented. His research does NOT suggest that short fire return intervals in chaparral were typical in historical time.

7. Erroneous Ecological Restoration treatments for northern chaparral
The Draft EIR falsely claims that chaparral in northern California is different enough from the south that the *"**ecological rationale** for fuel treatments"* can be used (4-15).

There is NO research that supports this claim. In fact, a study just released by the Joint

Fire Science Program indicates that there are indeed ecological trade-offs in reducing chaparral fire hazard in northern California (Wilkin, et al. 2015). Clearance of chaparral has also been recently suspected of increasing the spread of Lyme disease in vertebrates (Newman et al. 2015).

The Draft EIR also appears to be assuming that climate change will not modify northern California in a way that will replicate increased fire patterns found in southern California chaparral. This is in opposition to USFS research. Safford and Van de Water (2014) suggest chaparral type conversion is spreading northward into the northern Santa Lucia Range and may likely continue to spread as climate change and population growth increase the potential for ignitions.

8. Biased Case Studies/Faulty Generalization

It is critical that the Draft EIR does not ignore contrary data. The current draft does so by selecting only affirming case studies, rather than objective research, to prove a particular point.

For example, using the one-year-old prescribed burn conducted at Poppet Flats to demonstrate control of the 2006 Esperanza Fire (2-55) illustrates a failure to recognize that it is not practical to establish and maintain black ground around every vulnerable community.

The Esperanza Fire was able to be controlled at the referenced location. However, vegetation grows back, and it did in the Esperanza area, leading to the 2013 Silver Fire that re-burned a huge portion of the Esperanza scar (destroying 24 homes in the process).

Additional details concerning the 2013 reburn can be found here:
http://californiachaparral.org/wordpress1/2013/08/12/silver-fire-defies-popular-beliefs-about-wildfire/

The Draft EIR must use research that examines the entire picture and how *all the fuel treatments* impact fire spread. Anecdotal stories and cherry picking data lead to faulty generalizations - a fallacy of defective induction. The following research offers a more comprehensive approach.

Home Loss

Syphard, AD, JE Keeley, A Bar Massada, TJ Brennan, VC Radeloff. 2012. Housing arragement and location determine the likelihood of housing loss due to wildfire. PLoS ONE 7(3): e33954. doi: 10.1371/journal.pone.0033954

Rather than examining a narrow set of case studies, Syphard and her coauthors gathered data on 700,000 addresses in the Santa Monica Mountains and part of San Diego County. They then mapped the structures that had burned in those areas between 2001 and 2010, a time of devastating wildfires in the region.

The authors found:
- Nearby vegetation was not a big factor in home destruction.
- Grasses that often sprout in areas cleared of native habitat like chaparral could be more of a fire hazard than the shrubs.
-Geography is most important — where is the house located and where are houses placed on the landscape.

Defensible Space
Syphard, A.D., T.J. Brennan, and J.E. Keeley. 2014. The role of defensible space for residential structure protection during wildfires. International Journal of Wildland Fire 23:1165-1175.

The authors found:
- The most effective measures to reduce structure losses are to "reduce the percentage of woody cover up to 40% immediately adjacent to the structure and to ensure that vegetation does not overhang or touch the structure."
- There is no additional structure protection provided by clearing beyond 100 feet, even on steep slopes, and the most important treatment zone is from 16-58 feet.
- The amount of cover reduced is as important as the fuel modification distance; however complete removal of cover is not necessary. The term "clearance" should be replaced with "fuel modification" to emphasize this fact.

Fuel Breaks
Syphard, A.D., J.E. Keeley, T.J. Brennan. 2011. Comparing fuel breaks across southern California national forests. Forest Ecology and Management 261: 2038-2048.

The authors found:
- A substantial number of fuel breaks are never intersected by fires.
- Firefighter access — to fuel breaks for backfires and other control measures — was the most important determinant of their effectiveness.
- Among the forests studied, only 22% to 47% of fires stopped at fuel breaks, even when firefighters could access them.

9. Green House Gases
The Draft EIR fails to establish a reasonable/accurate way to measure greenhouse gas (GHG) emissions for treatment projects. The assumption that treated sites would create less GHG emissions than if burned in a wildfire, and thus sequestering carbon (meaning projects have no impact), is questionable.

Instead, the VTP needs to use a 100-year timeline for greenhouse gas (GHG) emissions. We recommend a 100-year timeline in part because carbon offset projects by groups such as the Climate Action Reserve run on 100-year timelines, and because it is our understanding that CalFire and the Board of Forestry are partially responsible for

California's carbon sequestration efforts. To us it makes sense to calculate the GHG impacts of the VTP using the same metrics that are used to calculate carbon sequestration by other projects overseen by CalFire.

An example in how a 100-year timeline is used follows.

- On the project impact side, the total GHG emissions are calculated from a project over a 100-year time span. To determine the impact on a site that is repeatedly treated every 10 years, the sum of the total GHG emissions for 100 years of treatments (10 sequential vegetation treatments) is calculated.

- On the natural impact side, GHG emissions are calculated from fires, using the calculated "natural" fire return interval, and again summed over 100 years. If there is a 50 year fire return interval for a project site, emissions are calculated as if the site burned twice in the 100 year period. The sum of the GHG emissions from the two fires is calculated.

- The two sets of emissions are compared, and the difference between them is the cumulative GHG impact. This method provides a fairly simple standard for quantitative calculations that fits in with what the Board is starting to do with reforestation for carbon sequestration. By including treatment repetition times and fire return intervals and scaling up across the entire VTP area, the Board can calculate the real impacts of the VTP.

10. Climate change and species migration

From the available science, it appears that California's plants adapted to climate change during the ice ages by migrating (Lancaster, L. T., and K. M. Kay. 2013. Origin and Diversification of the California Flora: Re-Examining Classic Hypotheses with Molecular Phylogenies. Evolution 67:1041-1054), and there is no reason to think that plants will not respond to future climate change by continuing to migrate, although their migration routes are massively limited by development, agriculture, and silviculture.

CalFire, through the VTP, quite possibly controls the outcome of migrations in the few areas that remain open. Both fires and especially clearances in areas critical to successful migration could exacerbate the loss of sensitive species by killing individuals that attempt to establish in treatment areas. To the degree that the data exist, critical migration corridors need to be identified, and impacts of the VTP upon these areas need to be analyzed and mitigated as necessary.

Our understanding is that plant migration was analyzed in the EIR for the Desert Renewable Energy Conservation Plan (DRECP), and we strongly suggest that impacts on migration corridors be studied as part of the next VTP EIR.

Other Points Needing Clarification

- Condition Class 3 (4-39) needs to clearly indicate it can meant either not enough fire or too much. Additionally, the fuel rank of 3 needs to be detailed out to include "too much fire."
- Climate change/carbon sequestration is only related project to emissions. It needs to reference carbon sequestration balances.
- There is no definition for old-growth chaparral. (4-16) Fifty-year-old stands and above qualify.
- The WUI definition needs to be based on science, not agency opinions.
- The structure of the public meetings needs to be clarified.
- "Critical infrastructure" needs to be defined.
- Different forest types need to be recognized.
- The Draft EIR fire modeling shows fuel breaks on every ridgeline without incorporating the science that clearly shows this is not an effective strategy and causes unnecessary damage to plant communities.

What we wrote in our 2005 comment letter on the draft VTP then being considered still applies to the current draft.

> If a thorough analysis of the true costs of various fuel modification treatments is performed (one has never been done), we believe concentrating efforts directly where loss of life and property can occur will produce the greatest and most effective benefit.

We are hopeful such an analysis will also be imbedded in the current effort.

Sincerely,

Richard W. Halsey
Director
California Chaparral Institute
rwh@californiachaparral.org

Frank Landis, PhD (Botany)
Conservation Chair
California Native Plant Society
San Diego Chapter

May 24, 2016

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Board Analyst
Email: VegetationTreatment@bof.ca.gov

Dear Ms. Hannigan and Members of the Board,

It is with a deep sense of disappointment to find that the current Draft Programmatic Environmental Impact Report (DPEIR) for the state's proposed Vegetation Treatment Program contains many of the same errors (some with the exact wording), contradictions, and failures to identify environmental impacts that were pointed out in previous versions.

Many of the productive suggestions provided to the Board of Forestry on how they could improve the draft DPEIR were ignored, including those from the California Legislature's required review by the California Fire Science Consortium, the Department of Fish and Wildlife, fire scientists, and environmental groups.

Potential impacts are dismissed by the DPEIR without support, mitigations of impacts are unenforceable and unmeasurable, the treatment of northern chaparral is justified by non sequitur reasoning, and the research of several scientists continues to be misrepresented (despite corrections being submitted). The lack of transparency remains a significant issue – using a local newspaper to inform the public about projects is no longer adequate.

One of the most egregious examples of the DPEIR's failure is the continued use of outdated and inadequate spatial data that provides the foundation for the entire Program. Although updated data is available from Cal Fire itself, **the DPEIR ignores this rich resource** and depends instead on questionable information from decades ago.

As a consequence, the current DPEIR fails to meet the requirements of the California Environmental Quality Act (CEQA).

The DPEIR also reveals **a significant number of inconsistencies** as the document initially references current science to only qualify or ignore it later in order to support the Program's objectives. By using contradictory statements, undefined terms, and legally inadequate mitigation processes, the document is a testament in ambiguity. It appears to be a program in search of confirming data rather than one developed from examining the actual problem.

The most concerning issue, however, relates to the failure of the document to provide a key component of a programmatic EIR - providing a more exhaustive consideration of effects and cumulative impacts than could be accomplished at the project level (14 CCR § 15168).

Instead, volumes of repetitive text are punctuated with the unsupported claim that determining impacts is impossible, pushing it off to project managers to determine with a checklist and standard project requirements that depend on subjective judgments.

How does the DPEIR justify ignoring a thorough examination of impacts as required by CEQA? The document vacillates between claiming the Program is too large and complex to analyze, or the treatment areas are too small to have an impact.

As a consequence, the current DPEIR

- fails to provide adequate support for concluding that the proposed program will not have a significant effect on the environment
- fails to provide adequate guidance to prevent significant environmental harm
- fails to adequately support Cal Fire's mission to protect life, property, and natural resources

Briefly, the reasons for these failures include:

1. Circumventing CEQA

- impacts determined to be less than significant by the "Fallacy of Authority" (our conclusions are true because we say so – no evidence provided)
- lack of detail as required within a programmatic EIR
- passing on responsibility to project managers to determine potential impacts
- inadequate mitigation measures
- Significance Criteria to determine impact to biological resources dismissed without support

2. Substandard Research

- misrepresenting cited scientific literature
- dependence on anecdotal evidence
- contradictory statements
- ignoring information in the record
- cited references missing, non sequiturs

3. Inadequate Data

- outdated fire hazard analysis model/data unsuitable for project level planning
- utilizing coarse-scale maps that cannot provide sufficient detail for competent analysis
- WUI assessments based on 26-year-old information
- dependence on maps that no longer reflect current conditions

The DPEIR also fails to properly address the impacts the Program may have on **carbon emissions and the loss of carbon sequestration** by the clearance of native habitats.

A list of **Suggested Improvements** will follow the evaluation below.

Our Hope

Having worked on the Vegetation Treatment Program since 2005, our experience with this process allows us to offer a uniquely informed evaluation of the DPEIR.

Despite addressing the same problems over and over again, after all the well-informed feedback, all the legal battles, and all the delays caused by failures to meet requirements of environmental compliance, we remain hopeful that a quality Vegetation Treatment Program will emerge in a collaborative manner.

For a quality Program to develop, however, the process must focus on **"How do we protect lives and property from wildfire?"** rather than the current priority, "How do we manage fuel?" These are different questions with very different solutions.

1. Circumventing CEQA

Failure to Determine Impacts

The lack of detail in the DPEIR is a clear violation of the California Environmental Quality Act's requirements for a programmatic EIR.

Throughout the document, the DPEIR completely ignores the necessary detail needed to determine if the Program will have significant impacts. Instead, it defers to managers at the individual project level because the Program is either too "large and complex" to consider the true environmental impacts within the DPEIR (4-116 among others), or too small because the projects average 260 acres (5-44 among others). By using the "Fallacy of Authority," the DPEIR claims without providing supporting evidence,

> *Because of the amount of acreage eligible but not receiving treatment under the VTP, the proposed Program would likely result in a less than significant cumulative effect on biological resources at the bioregional scale.* (5-27)

The DPEIR frequently follows up these claims, again without supporting evidence, with the suggestion that the Program may actually provide a net environmental gain because it may "decrease the frequency, extent, or severity of wildfire." (5-32)

Such rationales have no merit. There is a rich source of literature describing the potential impacts, both local and cumulative, of “fuel treatments” as well as the ecological benefits of high-severity fires in crown fire ecosystems. The DPEIR should adhere to the requirements of CEQA and determine the overall environmental impact of the Program, not pass the responsibility on to individual project managers via a checklist based on subjective opinions.

This failure to account for environmental impacts is troubling because it gives the impression that the DPEIR was not produced to comply with CEQA, but rather to accomplish its stated goal of streamlining the regulatory process (1-7). In fact, this is in line with the Board of Forestry’s 2010 Strategic Fire Plan which endorses efforts to "remove regulatory barriers that limit hazardous fuel reduction activities” (Fire Plan Goal #5, objective “b”).

While it may be within the rights of the Board of Forestry to lobby the legislature to change laws, CEQA is quite clear about what programmatic EIRs need to address. An EIR’s purpose is to examine environmental impacts. The Board should produce a document that does so.

As we wrote in our comment letter on the draft 2010 Fire Plan,

> “Rather than seeking ways to circumvent proper scientific oversight and efforts to insure that scarce fire management resources are used wisely and in the most effective way, the Plan should recommend inclusive community processes that embrace environmental review and invite all stakeholders. While democracy can be inconvenient and collecting information that may question a proposed project frustrating, it is the best way to create a successful fire risk reduction strategy.”

Inadequate Standard Project Requirements (SPRs)

Even if the law allowed the lead agency to pass along all the environmental impact determinations/responsibilities to local project managers, the DPEIR’s project checklist and undefined “Standard Project Requirements” (SPRs) make such a task impossible.

SPRs are essentially mitigation measures. Such measures as per CEQA must be legally adequate. The DPEIR must demonstrate with solid evidence that mitigation measures are feasible, effective, and enforceable.

- Many of the Program’s SPRs fail to provide enforceable procedures (via legally binding agreements) that will produce measurable effectiveness.
- Important terms are not defined, allowing for inconsistent implementation and unknown impacts of projects.
- Some SPRs are so vague and allow for so much subjectivity that they are meaningless.

For example, despite the fact that BIO-5 appears to provide a mechanism to reduce the impact of "fuel treatments" in old-growth chaparral (2-57), it essentially requires nothing of the project manager for the following reasons:

Only southern chaparral. Without justification, the DPEIR excludes all chaparral from BIO-5 except that which occurs in nine southern and central counties.

Old-growth chaparral undefined. The term "old-growth" is not defined, an issue that was pointed out to the Board after the previous draft. Is old-growth chaparral just outside the average fire return interval? Is it more than a century old? Is the presence of 135-year-old *Arctostaphylos glauca* individuals required? Is it different in San Diego County in comparison to Fresno County?

Median fire return interval undefined. Although the DPEIR discusses fire return intervals, there is no guidance in the SPR to assist the local manager in determining what this value happens to be. Given the fact that there is tremendous misunderstanding and resistance to accepting the latest science about this topic (Halsey and Syphard 2015), it is critical that the DPEIR addresses this issue.

Critical infrastructure/forest health undefined. The project manager may dismiss BIO-5 if a proposed project is not deemed necessary to protect "critical infrastructure" or "forest health." Neither term is defined, therefore a project can be approved that destroys valuable, old-growth chaparral because again, the DPEIR does not provide the necessary guidelines.

Projects causing significant environmental harm are not speculative. One such project occurred July 4, 2013 when Cal Fire conducted a prescribed burn in the San Felipe Valley Wildlife Area, San Diego County. The approximately 100-acre fire escaped and burned 2,781 acres, causing significant damage to an old-growth stand of rare desert chaparral in addition to other plant communities.

Cal Fire's partial justification for the project was that it would provide "indirect community protection to Julian and Shelter Valley." This justification was erroneous. Julian is 4.5 miles distant to the project location and 2,000 feet higher in elevation. Shelter Valley is 6 miles distant with extremely light, arid vegetation between it and the project. The project also violated the land management plan for the site and was out of prescription when ignited (CCI 2013).

Clear, unambiguous definitions are required to prevent this type of incident from occurring again. In addition, it would be helpful if the San Felipe escaped burn could be highlighted in a case study to help managers avoid similar situations.

Preventing type-conversion unspecified. There are no guidelines on how to prevent the type conversion of native shrublands. In fact, the concept appears to be misunderstood in the document. It is not the instant conversion of shrublands ("brush fields") to non-native grasslands ("range") as the DPEIR discusses, but is typically a gradual process. It begins with the loss of biodiversity by the elimination of obligate seeding shrubs leading to a combination of resprouting shrubs and native sage scrub species or resprouters and alien grasses (Halsey and Syphard 2015). While still appearing to be "chaparral" to the casual observer, it is in fact a seriously compromised habitat.

Vague consultations. The purpose and outcomes of consultations with the California Department of Fish and Wildlife (CDFW) and the California Native Plant Society (CNPS) are not specified. What will happen if CNPS indicates the project will cause significant environmental harm or if it rejects the project on grounds that several 135-year-old manzanita specimens will be destroyed? Will Cal Fire cancel the project? Reduce the size? Again, since old-growth chaparral is not defined, the consultation becomes fraught with subjective opinions and uncertain impacts.

Inadequate transparency/public notification. Publishing a notice about a project workshop in "a newspaper that is circulated locally" may have been adequate public notice twenty-five-years ago, but no longer.

The need for greater transparency and communication was emphasized as important in the DPEIR. The subject was raised previously by CNPS and us in both written and oral testimony. It was also a key recommendation in the California Fire Science Consortium's Panel Review Report of the previous VTP draft (CFSC 2014) whereby,

Projects should include a general description of what is expected to be done. This should be announced at least six weeks before the project takes place. A more detailed description of the project, including project goals ***and scientifically-grounded rationale*** *as to why and how these goals will be met, should be released prior to the project implementation. The monitoring plan and its results should be made publically available when completed.*

At minimum, the above information should be posted on a website database **(emphasis ours).** *Additional outreach via newsletters, TV, radio, or events may be included.*

There are additional suggestions from the Panel Review Report concerning transparency that the DPEIR ignored that need to be incorporated into the Program.

Outcome of public workshops unknown. If people show up to such a workshop, how will the information gathered on the "potential for significant impacts" be incorporated in the project planning phase? If a group or organization provides evidence that a project has serious environmental impacts, what recourse will the public have if the evidence is ignored and the project proceeds? Considering the current DPEIR process and the time that has been required to include current science, we are not optimistic that the public's input will be seriously considered.

BIO-5 is a prime example of how the DPEIR allows the project manager to make subjective decisions that may cause significant impacts without a reasonable opportunity for mitigation or independent oversight to assist in preventing such environmental harm.

Inadequate Analysis of Significance Criteria

The entirety of Chapter 5 regarding the dismissal of cumulative impacts can be summed up with the following (parentheses/bold added) (5-41):

> *Landscape constraints, Standard Project Requirements, and Project Specific Requirements developed as a result of the Project Scale Analysis will, in the aggregate, reduce cumulative impacts to* --- **(fill in the biological resource in question)** --- *to a less than significant level as assessed at the scale of the bioregion. Reduction in the occurrence of high severity wildfire as a result of vegetation treatment technique application is expected to provide additional benefits to aquatic resources although to a degree not presently determinable.*

Without supporting evidence, Chapter 5 goes through all the possible biological resources and dismisses the possibility of significant impacts by again employing the Fallacy of Authority. The repeated claim that the Program will reduce high-severity wildfire is added here too, and again the DPEIR defers supporting evidence because it is "not presently determinable."

In summary, the DPEIR is stating that there is not enough research to determine the environmental impact of the Program. This is contrary to available information in the record.

2. Substandard Research

Another key recommendation of California Fire Science Consortium's Panel Review Report (CFSC 2014) was to, "Include additional scientific findings throughout," and that,

> *… **a sound scientific foundation** should be reflected with each vegetation management plan providing a clear rationale for the selected action. This should be done by providing additional references to support claims in the VTDPEIR and including additional scientific concepts that are relevant to the planned actions.*

The DPEIR has improved its review of the chaparral's fire regime. However, as to developing a sound scientific foundation for the plan, the DPEIR fails to do so.

Research misrepresented

There are numerous examples of scientific research being misrepresented in order to support the goals of the Program.

Northern chaparral fires are increasing (Safford and Van de Water 2014). The DPEIR claims northern chaparral is not threatened by increased fire frequencies like southern chaparral (4-113). It cites Safford and Van de Water 2014 as support. This is a fallacy of incomplete evidence (“cherry picking”). While Safford and Van de Water do indeed note this condition, they also warn that,

> ...recent trends in fire activity, burned area, and fire severity suggest that the situation is rapidly changing as climate warms and fuels continue to accumulate.

The Safford and Van de Water paper also notes that increasing fire frequencies appear to be spreading into the northern Santa Lucia Range. It is likely this trend will continue to spread northward as climate change and population growth increase the potential for ignitions in the northern part of the state.

While dismissing increasing fire threats to northern chaparral in Chapter 4, the document’s Introduction presents a contradiction by emphasizing the fact that fires in northern California are indeed increasing.

> *These types of anthropogenic alterations are some of the reasons why wildfire frequency in Northern California has increased 18 percent in the period from 1970 to 2003...* (1-2)

If the Board desires the DPEIR to be a plan for the future, as the DPEIR explicitly states it is doing, it should plan for that future rather than depend on conditions of the past. It would also be helpful for the DPEIR to be internally consistent. In descriptions of the fire hazard severity zone analysis Cal Fire repeatedly states that the goal is to model fire hazard based on potential future (NOT current) conditions.

Non Sequitur. The DPEIR follows its misrepresentation of the Safford and Van de Water paper by leaping to the conclusion that fuel treatments in northern chaparral can be used for ecological purposes. This is a non sequitur. There is no scientific evidence to support such action.

The failure to correct this section is perplexing since CNPS and we offered testimony specifically discussing these errors. We wrote in our letter of October 27, 2015 (Appendix C),

> “There is NO research that supports this claim (treating northern chaparral for ecological purposes). In fact, a study just released by the Joint Fire Science

> Program indicates that there are indeed ecological trade-offs in reducing chaparral fire hazard in northern California (Wilkin, et al. 2015). Clearance of chaparral has also been recently suspected of increasing the spread of Lyme disease in vertebrates (Newman et al. 2015).
>
> The Draft EIR also appears to be assuming that climate change will not modify northern California in a way that will replicate increased fire patterns found in southern California chaparral. This is in opposition to USFS research. Safford and Van de Water (2014) suggest chaparral type conversion is spreading northward into the northern Santa Lucia Range and may likely continue to spread as climate change and population growth increase the potential for ignitions."

It is gratifying that this version of the DPEIR recognizes that every ecosystem has its own special relationship to fire. However, **the artificial truncation of northern and southern California chaparral is not based on research or ecological realities.** The DPEIR needs to correct this error and recognize that chaparral, California's most extensive plant community, can be threatened by increasing fire frequencies throughout the state. In addition, the DPEIR needs to recognize that any treatment of chaparral should be viewed as a **resource sacrifice** unless proven otherwise.

Ironically, the issue of "cumulative impacts to chaparral communities from program treatments and wildfires" is cited as an Area of Controversy in the DPEIR. As such, the topic should have been addressed in a thorough, scientific manner.

Claiming that chaparral in northern California can be treated for ecological benefit is one of the most significant errors in the DPEIR

Infrequent, large fires are the pattern (Lombardo et al. 2009). After recognizing the problems with short fire return intervals in chaparral, the DPEIR appears to hopefully suggest that science may yet find that short fire returns are not a problem by misrepresenting Lombardo et al. (2009).

> *"... chaparral does not need more fire, it needs less (Safford and Van de Water, 2014). However, new scientific information could modify that conclusion in the future as it becomes available. For example tree-ring data collected by Lombardo et al. (2009) in bigcone Douglas-fir stands surrounded by chaparral indicate that both extensive and smaller fires were present in historical time."*(4-111)

This is the exact wording used in the last version of the DPEIR. The Board consequently ignored testimony and a letter from the lead author of this paper that the DPEIR was misrepresenting the cited research (Appendix D).

The Board is ignoring information in the record in violation of CEQA.

Prescribed fire and seeds (Keeley and Fotheringham 1998). (3-18) The DPEIR incorrectly uses this paper to support the positive benefits of prescribed fire for restoration. This paper actually deals with seed germination of chaparral plant species in southern California, the very same region that the DPEIR acknowledges as being threatened by too much fire, stating correctly that, *“burning in chaparral may lead to adverse ecological results.”* (4-112)

This citation is another example of the DPEIR’s internal inconsistency and failure to provide a proper interpretation of literature being cited.

References inadequate for a science-based document

A significant number of references used to support statements in the DPEIR are from testimony or reports to Congress. While such references can provide overviews, many are too broad or political in nature to be of any use in developing a scientific foundation. And because such references are not peer-reviewed, there is no mechanism for determining how factual, evidence-based, or scientifically accurate they are.

McKelvey et al. 1996, a report to Congress on the forest of the Sierra Nevada, is cited out of context to support the notion that, “prescribed fire is believed to benefit the overall health of fire adapted ecosystems” (4-151). While true for some Sierra Nevada forests, this is not true for chaparral. This represents a chronic problem in the DPEIR – citing papers that are not applicable to the statement being made, but are used to support the general objectives of the Program.

Bonnickson 2003 (2-11) was testimony provided during a politically charged Congressional hearing after the 2003 fires. Much of the contents are opinion, not scientific fact.

Although used to support a statement in the DPEIR, the Bonnickson paper does not appear in the reference list. In fact, there are other papers cited but not listed in the references, or in the reference list and not cited in the text (e.g. Countryman 1972 – a speculative narrative, not scientific research). A simple editing program could resolve this problem.

Incorrect citations

The Sugihara et al. 2006 citation, an introductory chapter in a book about fire in California is used 12 times within Chapter 4. We searched for the specific DPEIR point the citation was supposed to be supporting within the Sugihara et al. work, but were unable do so in most instances. In other words, the statement the DPEIR is using the citation to support does not exist within the Sugihara et al. reference.

Using an introductory book chapter multiple times to establish a scientific foundation for the DPEIR is inappropriate. Original peer-reviewed research needs to be used and the research needs to be double checked to verify that cited references are in fact relevant to the point in question.

Anecdotal evidence

Unsupportable WUI definition. In several instances, the DPEIR depends on anecdotal, rather than scientific evidence to support its conclusions.

For example, the DPEIR claims a 1.5 mile wide WUI is necessary because this is assumed to be the approximate distance embers can be carried from the fire front (4-36). The DPEIR dismisses concerns that its definition of the Wildland Urban Interface is too large an area because Cal Fire staff overheard USFS representatives from the Cleveland National Forest talk about a 6 mile wide WUI buffer. (4-36) Casual conversations are not legitimate scientific references.

The only citation the DPEIR uses for support is the Sierra Nevada Forest Plan Amendment. (3-39) This is a serious misrepresentation. The Amendment does not provide any evidence for a 1.5 mile WUI, but rather is a management document that established an arbitrary distance to determine the number of homes/communities affected by the Plan.

Ironically, the DPEIR discounts a smaller WUI, such as the 1,000 foot version in one of the alternatives (3-39), because, “A review of the literature found no scientific basis to limiting WUI treatments to 1,000 feet.”

This perspective is more appropriate for the DPEIR’s 1.5 mile WUI as there is significant evidence indicating fuel treatments even beyond 300 feet (the length of a football field) are excessive for the purpose of reducing fire risk to communities (see Cohen’s extensive research).

The DPEIR appendix, “Characterizing the Fire Threat to Wildland-Urban Interface Areas in California” is equally unscientific and does not provide the necessary information to properly assess the characteristics of the WUI.

For example, Figure 1 does not distinguish fuel types, slope conditions, how heat per unit area and rate of spread is estimated/modeled/calculated. The axes are not mentioned in the descriptions. Another important point omitted from this section is that flame length as an indicator of fire risk varies by vegetation type – 12 foot flame lengths in conifer forests are routine, but not in grasslands.

As a tool, Figure 1 is not useful.

Considering the expense and extensive environmental damage that can occur with fuel treatments, the Board should base the size of the WUI on available science, not arbitrary numbers (see Appendix A: Ember Behavior: Why the 1.5 mile WUI is Excessive).

3. Outdated/Inadequate Data

Ignoring Cal Fire Data

Inexplicably, **the DPEIR is based on decades old data** even though Cal Fire's GIS analysts have completed two updated fire hazard analyses since, and are now working on a third. The current document is based on products from a fire hazard analysis done in 2001-2003 which is used a wildland urban interface WUI model based on the 1990 U. S. Census. (2-17)

The U. S. Census is conducted every ten years. GIS analysts at the University of Wisconsin-Madison have produced block housing density maps and derived WUI maps serially using the 1990, 2000, and 2010 Census data. They are free to the public. Cal Fire uses these datasets as input for their new fire hazard analyses.

The DPEIR does not mention that Cal Fire has produced an updated, revised version of the 2003 fire hazard analysis in 2007 using the 2000 U. S. Census data. They issued revised fire hazard analysis maps that were reviewed and in some cases amended by local firefighting agencies in every county:
http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones

The DPEIR does not mention that Cal Fire updated fire hazard maps again in 2010, apparently adding some new fire history data inputs:
http://frap.cdf.ca.gov/data/assessment2010/pdfs/2.1wildfire_threat.pdf

The DPEIR does not mention that a Cal Fire webpage dated April 2016 says the agency is currently gathering updated data to do another wildfire hazard analysis:
http://cdfdata.fire.ca.gov/fire_er/fpp_planning_severehazard

There is a significant amount of information about the fire hazard analyses and planning based on them on the Cal Fire webpage. It's been there for years (most of it dates to the 2007 update). The current DPEIR ignores much of this.

Legal origins of the program:
http://cdfdata.fire.ca.gov/fire_er/fpp_planning_severehazard

Non-technical overview of the program and analysis:
http://osfm.fire.ca.gov/codedevelopment/pdf/Wildfire%20Protection/FHSZ%202007%20fact%20sheet.pdf

Discussion of methods including a flowchart of the GIS analysis:
http://osfm.fire.ca.gov/codedevelopment/pdf/Wildfire%20Protection/FHSZ%20model%20primer%20Fact%20Sheet%202007.pdf

Discussion of applying the analysis to natural resources on wildlands:
http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones_development

Minimal fire hazard predictability. The input data and analysis the DPEIR is based on remain woefully inadequate for project level planning.

Syphard et al. (2012) proved this point by comparing Cal Fire's 2003 final fire hazard analysis products (Fire Threat, Fire Threat People, and Communities at Risk) to actual structure loss data from 2003 and 2007 wildfires. They found that the Cal Fire fire hazard analysis had **no value in predicting the likelihood of structure loss.**

As per the California Fire Science Consortium Panel Report, the DPEIR should be informed by findings of modern fire science. But the DPEIR still proposes to base the entire Program on an old and flawed fire hazard analysis that has been proven in peer-reviewed fire science publications to have no predictive value. It is our understanding that this finding supports the professional opinion of the Cal Fire GIS staff that performed the analysis back in 2003.

Cal Fire acknowledges the limitations of the data on their Wildfire Hazard Real Estate Disclosure web page (http://frap.cdf.ca.gov/projects/hazard/hazard#VHFHSZdatalim).

> "… the map data showing VHFHSZ is out-of-date, incomplete, and reflects an inconsistent application of decision rules reflecting physical conditions contributing to hazard."

The DPEIR should not be allowed to cite an outdated analysis as a valid or credible tool for decision-making.

Cal Fire's GIS staff is very competent and should be utilized. They can provide a useful, statistically valid spatial analysis fire hazard model with good data, especially when following the best probability-based methodology as outlined in Scott (2006).

Inadequate maps. The maps provided in the DPEIR cannot provide enough information to properly assess the Program. They do not reflect data-rich research nor Cal Fire's expertise.

As in previous drafts, the DPEIR presents fuzzy, indistinct graphics reduced far beyond the point of legibility. The effective scale of these maps onscreen or printed is about 1:16

million. At 72dpi screen resolution each fuzzy indistinct pixel represents about 3.5 miles (approximately 8,000 acres) on the ground.

However, despite the extremely pixilated quality of the maps, significant contradictions can still be seen. For example, the three maps of the state in the Executive Summary and elsewhere, comparing State Responsibility Areas (SRA), Treatable Vegetation Formations, and Treatable Acres in the VTP. (E-7) The graphic appears to convey the treatable areas within SRAs, excluding some vegetation types as inappropriate to treat. And yet it is clear that the treatable areas in the third map include some areas that fall outside the SRA footprint shown in the first map.

This is not just about illegible maps, but one example of a much larger, systemic problem. The Program must be based on a solid, statistically valid technical analysis, undertaken in good faith, based on appropriately solid, modern data, and peer-reviewed fire science. CEQA requires it. The current DPEIR does not follow this standard.

Suggested Improvements to the Draft DPEIR

- Detail impacts. Examine possible direct and cumulative impacts and develop legally adequate mitigations for those impacts as required by CEQA.

- Recognize all chaparral as potentially threatened. Chaparral in the northern part of the state will likely be threatened by higher fire frequencies as the climate continues to change. There is no ecological rationale for fuel treatments in shrub dominated ecosystems in northern or southern California.

- Define terms. Define all terms utilized in the text needed to ensure consistency in use such as old growth chaparral, critical infrastructure, forest health, etc.

- Redefine WUI. Establish a reasonable distance for the WUI by using science rather than anecdotal information (see Appendix A and B).

- Use most current Cal Fire Fire hazard data. It is inadequate to utilize a fire hazard analysis done in 2000-2003 that uses a wildland urban interface (WUI) model based on the 1990 U.S. Census. The DPEIR needs to base the Program on current, scientifically verified information available from Cal Fire.

- Research support for conclusions. Conclusions in a DPEIR need to be supported by research, not by employing the Fallacy of Authority. Sweeping generalizations like the one below should not be in a science-based document.

> "*Landscape constraints, Standard Project Requirements, and Project Specific Requirements developed as a result of the Project Scale Analysis will, in the aggregate, reduce cumulative impacts to less than significant.*"

- Maintain consistency and research quality. Eliminate contradictions, errors in citations, and inconsistencies throughout the document.

- Consultation on chaparral treatments. All projects involving chaparral should be developed in consultation and in agreement with the California Native Plant Society.

- Real alternatives. Create at least one new alternative that focuses on a program that emphasizes the reduction of fire risk by using "from the house out" approach – reducing home flammability, properly maintained defensible space, community fire safe retrofits, then strategic fuel treatments within 1,000 feet if needed.

- Account for biodiversity in chaparral. Incorporate into the cumulative impact analysis how biodiversity may be impacted by the Program. See Halsey and Keeley (2016).

- Increase transparency. Develop a web-based public notification process for projects similar to the US Forest Service SOPA website. For example: http://www.fs.fed.us/sopa/forest-level.php?110502

- Plan for the future. Base project need, selection, and treatment approach, on projected climate change scenarios, not past, anecdotal experiences (Please see Appendix E: Global Warming and Future Fire Regimes).

- Proper account of carbon sequestration. Recalculate the loss of carbon to account for the loss of below ground carbon sequestration in healthy chaparral communities.

With the impacts of human-caused climate change accumulating much faster than even the most severe predictions, it is imperative that every policy we implement from here on out must honestly and exhaustively examine how such policy can facilitate the reduction of carbon in the atmosphere and the protection of what natural environment remains.

The current DPEIR fails to do so.

Regarding carbon emissions, the DPEIR uses the same response it does throughout to dodge examining significant impacts – it merely states there won't be any impacts because of unsupported assumptions.

> *While there is not a direct correlation between implementation of a vegetation treatment project and a proportionate reduction in numbers of fires or acres burned, it is reasonable to acknowledge that while the VTP program would result in emissions of GHGs as a result of prescribed fire, it would likely result in some reduction in the numbers of fires and/or burned acres from wildfires and, therefore, would avoid some emissions associated with those fires. The VTPs contribution to cumulative GHG emissions would not result in a considerable contribution to GHGs and would result in a less than significant impact.*

The DPEIR assumes all the projects will work out properly, and treated plant communities will not type convert to low carbon sequestering grasslands because of the Program's project requirements. These requirements are legally inadequate and unenforceable.

The DPEIR fails to account for the loss of underground carbon storage with the concomitant loss of above ground shrub cover in shrublands, an important carbon sink (Jenerette and Chatterjee 2012, Luo 2007). The DPEIR also fails to address the research that has shown vegetation treatments often release more carbon than wildfires (Mitchell 2015, Law et al. 2013, Meigs et al. 2009).

By using assumptions based on anecdotal evidence and focusing on the short term (such as how to reduce flame lengths, remove dead trees, or increase the number of clearance projects), the DPEIR will likely exacerbate climate impacts, increase the loss of habitat, and fail to adequately accomplish its primary goal – protecting life and property from wildfire loss.

- Reduce fire risk from the house out. As we have written many times over the past decade, the most effective way to prevent the loss of life and property from wildland fires is to work from the house out, rather than from the wildland in. In other words, focus on reducing home flammability first (ember-resistant vents, replacing flammable features, cleaning roof gutters, etc.). Properly maintained defensible space is the other important half of the fire risk reduction equation. Wildland fuel treatments (beyond the defensible space zone) offer the least effective strategy to protect communities from wildfire.

All fire science points to this. Many county fire programs support "from the house out" concept. Cal Fire promotes this strategy too, and has since at least 2007.
http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_faqs#gen01

Unfortunately, DPEIR ignores these facts and focuses exclusively on vegetation management. This bias is reflected in Cal Fire's and the Board's public messages as well.

During Wildfire Awareness Week (May 1- 8, 2016), Cal Fire made 8 posts on their official Facebook page about protecting your home from fire. None mentioned the importance of home flammability. All focused on vegetation clearance.

On April 21, 2016, Cal Fire began a #ShareYourDefensibleSpace photo challenge on their Facebook page. We are submitted a photo of an ember-resistant attic vent to the contest with the suggestion to begin a companion #ShareYourFireSafeHome photo challenge to emphasize the main reasons homes actually ignite and burn down - unsafe structure design and flammable, non-vegetative materials around the home. Our photo was deleted shortly thereafter.

We resubmitted the photo and it remained online for several weeks. The Cal Fire Facebook moderator (Heather) thanked us for pointing out the importance of home flammability. Unfortunately, it appears the original contest post and the photo entries have now been deleted.

We urge the Board to reconfigure the DPEIR so that it incorporates the entire fire risk reduction equation, not just vegetation management. Suggestions on how to do so, and examples of programs that have worked, can be found in Appendix B: An Appeal to California's Fire Agencies.

- Reassess the efficacy of remote fuel modifications. Current research makes it clear that strategic fuel modification has only helped stop fires in fire weather if fire suppression forces can quickly and safely access them. Remote, back country fuel modifications are generally not effective in stopping fires and, as a consequence, haven't generated any significant reductions in total annual area burned in southern California (Keeley et al. 2009, Syphard et al. 2011).

Global surveys concerning fuel modifications have also demonstrated that even very large amounts of strategic fuel modification are not very effective in reducing total areas burned. This research makes a compelling case that constructing and maintaining large fuel treatments is not the most effective use of fire risk reduction resources (Price et al. 2015, Price et al. 2015b).

Conclusion

As we have in the past, we urge the Board of Forestry and Cal Fire to produce a document that starts by responding to the following question, **"How do we protect lives and property from wildfire?"** instead of "How do we manage fuel?" These are two different questions resulting in two different answers.

Such a powerful approach will challenge everyone to leverage their own experiences, be willing to consider new paradigms, and honestly collaborate with others, especially with those who have different perspectives. Otherwise, we will continue practices that have brought us to this point – increased loss of homes, increased loss of habitat, and increasing levels of carbon in our atmosphere.

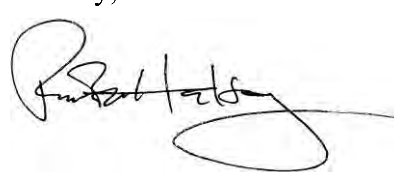
It was suggested to us after our testimony to the Board on August 26, 2015, that, "scientists used to believe a lot of things that we've learned were wrong. So we can't just wait around for science to find the correct answer. We need to move forward."

We do need to move forward, but we need to do so by utilizing *all the information available to us today,* not depend on outdated models, poor research, and incorrect assumptions.

Therefore, we urge the Board to prepare a revised DPEIR by addressing and incorporating the suggested improvements above.

We owe it to ourselves and future generations to get it right this time, especially because the changing climate will not be forgiving if we squander the opportunity.

Sincerely,



Richard W. Halsey
Director
The California Chaparral Institute

Attachments:
Appendix A. Ember Behavior: Why the 1.5 mile WUI is Excessive
Appendix B. An Appeal to California Fire Agencies
Appendix C. Resubmission of our letter of October 30, 2015
Appendix D. Understanding the Relationship between Fire/Chaparral - K.J. Lombardo
Appendix E. Global Warming and Future Fire Regimes

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Appendix A

Ember Behavior: Why the 1.5 mile WUI is Excessive

The likelihood of an ember travelling 1.5 miles from a flaming front and igniting any single given house (or any other given small, discretely located type of potential receptive fuel) downwind is likely quite small. However, ignition by a single ember is usually not how most houses burn down.

If a structure lies downwind of a weather-driven wildfire, chances are excellent that a large number of shorter range embers will ignite everything that can burn between here and there, creating more embers all along the way, and allowing the head fire to blow hopscotch over, across, and through just about anything to reach that house. The collective fire spreading effect of all the embers makes the head fire's downwind progress all but unstoppable while the fire weather lasts.

Tracked in real time, the instantaneous rates of ember production and subsequent transport by turbulent, gusty winds must be very transient and highly dynamic. In general, averaged over time, it is likely most embers fall near the flaming front in a decay curve as you move further and further downwind of the instantaneous location of any flaming front. At 1.5 miles, the tail of the decay curve is likely quite small. Chances are a structure will burn when the flaming front is close and the site is under the “thicker” part of that ember distribution curve.

The rationale for fuel treatments in areas a long way upwind of a community is that they will produce some additional fire safety even if they can't stop the fire because they will reduce the density of embers falling on a structure or community. **Such a claim is conjectural at best.**

Since fires produce embers by the millions, and ignition probabilities likely approach 100% in very dry fire weather, it is not at all clear what value reducing ember density might actually have in protecting structures or helping firefighters reduce fire spread.

We are unaware of any recorded quantitative data on ember density-by-distance.

Firefighter experience and the research have shown that weather-driven wildfires tend to spread across landscapes with very little regard to fuel type, or age (Mortiz et al. 2004). This spread is mostly through a large number of separate spotting events that start a large number of new fires running out ahead of any fire's flaming front. If structures are in the way, then fire will spread up to them, go over, and around them, and then move on downwind.

Like the onset of a coming rainstorm, at a given location one might experience a single ember, then another, then two, then more and more, until the main flaming front comes through and the ember density gets heavy. Ember density will decline as the fire passes by and continues downwind.

Once there is a modest amount of defensible space around a structure to make the surface fire stop short of direct flame impingement (varies with terrain, often no more than 30ft) and to prevent ignition by radiant heating (100ft max), and to be safe in case of potential turbulent convective heating so firefighters can feel safe enough to stay and defend (up to 150ft?), then it's all about ember ignition. Whether any given structure burns or not has everything to do with **how receptive it is to ignition by windborne embers** when that unstoppable fire comes through.

That NIST report on structure loss during the 2007 Witch Creek Fire, and much of their subsequent work, documents very clearly that lots of structures with good defensible space of up to 100 or more feet can and do get ignited by embers. Firefighters or civilians onsite defending a structure do so primarily by extinguishing spot fires on and in the structure before they can get big.

http://www.nist.gov/el/fire_research/wildland/project_wui_data.cfm

http://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.1796.pdf

This is exactly why risk reduction must work from the “house out.” All fire science points to this. Many county fire programs support this concept as well. Cal Fire promotes the "house out" strategy too, and has since at least 2007.

http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_faqs#gen01

Unfortunately, vegetation management gets the primary focus (please see Appendix B: An Appeal to California’s Fire Agencies).

Fire agencies, firefighters, fire scientists, and environmental groups are on the same page about this. What we've been fighting about all these years are questions about the efficacy of doing anything to “fuels” beyond the home ignition zone and beyond the largest plausible defensible space buffer.

The WUI as a concept should be determined by fire operation concerns of fighting fire at the edge of town. So WUI as a concept is all about defensible space and how much of that do we need.

USFS fire scientist Jack Cohen has clearly demonstrated that about 100ft is all any structure needs to avoid ignition by radiant heating from even the hottest wildfire on flat ground with little wind. Add those factors drive heat and convection horizontally and more space will be needed.

Let’s assume for discussion that a 300 ft defensible space would be desirable for doing point protection versus long, completely sideways flames that might be expected in the very most hazardous fire terrain imaginable. Three hundred feet of defensible space would be very excessive in all but the most pathological cases of structures built in terrain where no one should be living and no firefighters should be asked to make a stand against fire.

Three hundred feet is only 5% of the way to the 8,000ft (=1.5miles) that the DPEIR currently proposes everywhere.

So the 1.5 mile definition of WUI everywhere is excessive.

Ember travel distance

As far as we know, the longest distance spotting event documented in fire literature occurred on Feb 7, 2009 ("Black Saturday") during the 2009 Victoria, Australia firestorms. Spot fire ignitions from Bunyip Park were documented at 20km (approx 12 miles).

Below are two annotated references concerning that event and another from the recent Fort McMurray Fire in Alberta, Canada.

Campbell, Peter. 2010. 2009 Victorian bushfires. Greenlivingpedia.org
http://www.greenlivingpedia.org/2009_Victorian_bushfires

Local weather stations on “Black Saturday” 2/7/2009 recorded sustained winds of approximately 30mph blowing nonstop from the N and NW for about 12 hours during the worst of the fires. The winds reversed direction during the course of the incident, blowing from the SE. This would be quite typical for a major Santa Ana wind event in southern California. In fact, Santa Ana winds often blow even stronger than this. The duration and the reversal are also typical of Santa Ana winds.

Daily high temperature was a record-setting 46.4degC (114degF). Relative humidity was as low as 5%. This is a higher temperature than we are ever likely to see in southern California, but our relative humidity often goes lower than this (to near zero) during our worst fire weather.

The area of Victoria State, Australia, had gone for a record-setting 38 days without any rain. Southern California’s seasonal drought is commonly 5-6 months.

Widespread and very long distance spotting was observed. Fire spread rates of up to 100km/hr (62 miles/hr) were observed. Fire spread through all types of land cover, including farmland, and forests where extensive fuel modification by Rx burning had been performed for fire safety. Fire officials emphasized that this fire was driven primarily by weather, not fuels.

The main fire at Bunyip Park was started by lightning. Several other fires in the area were confirmed or suspected to be arson.

Egan, Carmel and Steve Holland. 2009. Inferno terrorizes communities as it rages out of control. The Age, Feb 8, 2009.
http://www.theage.com.au/national/inferno-terrorises-communities-as-it-rages-out-of-control-20090207-80fw.html

> *The Bunyip Ridge inferno lived up to its menacing threat yesterday, bearing down on one tiny Gippsland community after another and forcing firefighters to retreat ahead of its towering fire head.*
>
> *More than 300 firefighters battled the three-kilometre-wide fire front before being forced to pull back as it made its run out of the state forest around 4pm towards the*

villages and towns of Labertouche, Tonimbuk, Longwarry, Drouin and Jindivick.

By 6pm, fanned by gale-force north-westerly winds, it had burnt 2400 hectares of forest and farmland and unknown numbers of homes and outbuildings.

Flaming embers started spot fires up to 20 kilometres to the south and threatened homes as far away as Warragul.

Ha, Tu Thanh. 2016. The perfect storm of conditions: here's how the blaze reached Fort McMurray, and why it spread so fast. The Globe and Mail. http://www.theglobeandmail.com/news/alberta/albertas-highway-of-fire/article29863650/

The fire that jumped over the Athabasca River was a spot fire, Mr. Schmitte said.

Mr. Burnett said he had seen situations where spotting enabled a forest fire to leap eight to 10 kilometres ahead of its main line.

Spot fires are also troublesome when they are near urban areas, he said, because embers ignite rooftops or rain gutters clogged with dead leaves and pine needles.

Cited Reference

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Appendix B

An Appeal to California's Fire Agencies

Emphasizing home flammability, as well as vegetation management, can save more homes during wildfires.

Local, state, and federal fire agencies are urged to expand their fire education efforts. Currently, the primary, and sometimes the only message citizens hear is to clear native vegetation ("brush") from around their homes. While creating defensible space is a critical component of fire risk reduction, it fails to address the main reason homes burn - embers landing on flammable materials in, on, or around the home, igniting the most dangerous concentration of fuel available, the house itself.

Fire risk reduction education must emphasize BOTH how to reduce home flammability and how to create defensible space. As seen in the photo on the next page, **many homeowners have complied with defensible space regulations only to see their homes burn in a wildfire.**

Educational materials and public announcements must make clear that without addressing the entire fire risk reduction equation, your home has a greater chance of burning in a wildfire. This includes creating defensible space AND retrofitting flammable portions of homes such as,
- the replacement of wood shake roofing and siding
- installation of ember resistant attic vents
- removal of flammable landscaping plants such as Mexican fan palms and low-growing acacia
- removal of leaf litter from gutters and roofing
- removal of flammable materials near the home such as firewood, trash cans, wood fences, etc.
- roof/under eave low-flow exterior sprinklers

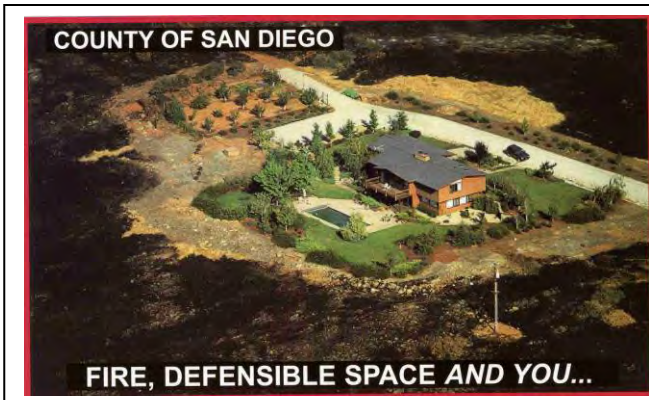
It also must be made clear to homeowners that by having well maintained and lightly irrigated vegetation within the outer 70 foot portion of the defensible space zone can play an important role in protecting the home from flying embers and radiant heat. Bare earth clearance creates a bowling alley for embers and can actually increase fire risk if invaded by flammable, non-native weeds.

We urge Cal Fire to address the full fire risk reduction equation when revising the draft of their proposed Vegetation Treatment Program.

A comprehensive approach to home protection can be found here:
http://www.californiachaparral.org/bprotectingyourhome.html

The New Message. The photo above shows a home with extensive defensible space and proper vegetation management that burned during the May 14, 2014, Poinsettia Fire in Carlsbad, California. Addressing the entire fire risk reduction equation is essential.

The Old Message. The photo to the right, distributed widely after the 2003 California firestorm, creates a false sense of security by implying that defensible space is adequate to protect a home from wildfire.



Mountain communities learning to use federal grants to eliminate wood roofs, a lead cause of home loss in wildfire

David Yegge, a fire official with the Big Bear Fire Department, is about to submit his fourth grant proposal to the FEMA pre-disaster mitigation grant program to pay up to 70% of the cost of re-roofing homes with fire-safe materials in the Big Bear area of San Bernardino County. Yegge has also assisted the towns of Idyllwild and Lake Tahoe to do the same. The grant includes the installation of non-ember intrusion attic vents.

Yegge's first grant was for $1.3 million in 2008. He identified 525 wooden-roofed homes in need of retrofits in the community of Big Bear Lake. Only 67 remain. Helping to push homeowners to take advantage of the program is a forward-thinking, "no-shake-roof" ordinance passed by the Big Bear City Council in 2008 requiring roofing retrofits of all homes by this year. San Bernardino County passed a similar ordinance in 2009 for all mountain communities. Homeowners have until next year to comply. Such "future effect clause" ordinances can be models for other local governments that have jurisdiction over high fire hazard areas. "The California Legislature should adopt such an approach and Cal Fire should incorporate such retrofit programs into its new Vegetation Treatment Program," Halsey said.

In order to qualify for the FEMA grant, a cost/benefit analysis must be completed. "Our analysis indicated that $9.68 million would be saved in property loss for every $1 million awarded in grant funds," Yegge said. "FEMA couldn't believe the numbers until they saw the research conducted by then Cal Fire Assistant Chief Ethan Foote in the 1990s. There's a 51% reduction in risk by removing wooden roofs."

"The FEMA application process is challenging, but well worth it," said Edwina Scott, Executive Director of the Idyllwild Mountain Communities Fire Safe Council. "More than 120 Idyllwild homes are now safer because of the re-roofing program."

Additional Information

The state agency that manages the grants is the California Governor's Office of Emergency Services (Cal OES), Hazard Mitigation Grants Division. Cal OES is the go between agency and they decide what grants get funded based upon priority established by the State Hazard Mitigation Plan. Without the help and assistance of Cal OES, it is not likely the FEMA grants would have be funded.

David Yegge given fire leadership award:
http://kbhr933.com/current-news/david-yegge-awarded-firewise-leadership-award/

The Mountain Area Safety Taskforce re-roofing program:
http://www.thinisin.org/shake/

The Big Bear re-roofing ordinance:
http://www.thinisin.org/home/images/stories/downloads/Ord_2008-383.pdf

The San Bernardino County re-roofing ordinance:
http://www.thinisin.org/shake/images/DOWNLOADS/ORDINANCES/ord_4059.pdf

FEMA grant program:
http://www.fema.gov/pre-disaster-mitigation-grant-program

Appendix D

Understanding the Relationship between Fire and Chaparral

From Lombardo, K.J., T.W. Swetnam, C.H. Baisan, M.I. Borchert. 2009. Using bigcone Douglas-fir fire scars and tree rings to reconstruct interior chaparral fire history. Fire Ecology 5: 32-53.

Main Points

1. The southern California landscape was rich with fire from the early 1600s (and likely much earlier) to the mid 1800s. During this time we saw both localized fire events and landscape-sized events occurring. Large fires are a natural phenomenon of the southern California chaparral dominated landscape (1-3 per century).

2. By the early 1900s, many of the small fire events were absent from the record. Most of these small fires were likely the product of Native American activity. While small fires were frequent in the past, they did not effectively control or contain large events from occurring.

3. In limited cases, fire return intervals of less than 10-15 years were recorded by the same individual tree. Such short intervals, however, do not reflect what was happening on the broad landscape. The ecologic impact following those localized events is unknown. It is unlikely, however, that many of the chaparral species in those areas survived such frequent fire return intervals based on life history traits and modern day observations.

4. The presence of non-native species, such as grasses, has dramatically altered modern post-fire landscapes by quickly colonizing frequently burned areas.

Reconstructing Past Fire Regimes

Understanding the interactions between wildfire and native vegetation is critical to understanding how to manage the landscape for resource benefit. This is particularly true in our landscapes that are, or in some cases were, dominated by chaparral and coastal sage scrub species.

Fire plays a critical role in shaping these landscapes, however, while they are often referred to as "fire-dependent", these suites of species are actually quite sensitive to fire at particular intervals. Using modern era records to understand what has occurred on our landscapes is certainly informative; however, prior to drawing any conclusions we must first acknowledge that the ecological events and processes in the modern era are heavily influenced by anthropogenic activities (e.g. grazing, logging, settlement, climate change, etc.). To eliminate some of these influences and elucidate past ecologies that may have functioned in a more natural state, we must look into the deep past.

Historical reconstruction of ecological processes and events is one of the best tools available to land managers who are interested in understanding how our systems operated prior to advent modern day influences that have dramatically altered landscapes, species compositions and ecological processes. Present day managers can use the findings of these studies to establish natural baselines and guide restoration efforts whose aim is to re-create, as best as possible, fully functioning ecologies.

In the western United States, historic reconstructions that pre-date the 1800s, have been used extensively to establish the parameters for what is believed to be the natural operating state of the landscape. Native Americans have certainly had a degree of influence upon the American landscape for 1000s of years. We can't ignore the impact their land use and practices may have had on ecological processes and these impacts are embedded within the signals we detect in our modern day studies of the past. However, we do understand that their impacts were substantially lighter and spatially far less extensive than anything that has occurred in the past 200 years. So while we must always account for the potential impacts that these past anthropogenic practices may have played, we can examine historical records gleaned from natural data and begin to see how these landscapes may have operated with minimal human influence.

The Southern California National Forest Study

As a graduate student at the University of Arizona, I worked with Drs. Tom Swetnam and Don Falk on a reconstruction of fire histories in the southern California National Forests (Mark Borchert, a long standing USFS ecologist, was also a significant contributor to this study). The aim of our study was to document, examine and interpret the historical fire regime of the chaparral vegetation in these forest using Bigcone Douglas fir (BCDF) as a proxy species given that it is long-lived, able to withstand multiple fire events and relatively accessible in places. We only sampled stands that were completely surrounded by chaparral vegetation so that we could eliminate any influence on the BCDF fire record from fire that may have been more reflective of those originating and burning in mixed conifer stands.

In general, our results showed that fires, both big and small, were commonplace in the southern California forests from the 1600s to the mid 1800s. By the early 1900s, many of the smaller fire events were observed in the tree-ring record had ceased to exist. However, the large fire events that are familiar to many of us today, continued to occur. This was a common signal seen in Los Padres, Angeles and San Bernardino National Forests. While these results seem relatively cut and dry, detailed analysis and a clear understanding of the sampling techniques used to create tree-ring records, reveal a slightly more complicated story.

Below I have listed several distinct thoughts and interpretations that we believe are the main points to be taken from this work.

- The landscape was rich with fire from the early 1600s (and likely much earlier) to the mid 1800s. During this time we saw both localized fire events and landscape-sized events occurring. By the early 1900s, many of the small fire events were absent from the record. We believe that the absence of these types of events is due to the advent of fire suppression and the removal of Native Americans from the landscape. Furthermore, this result signifies to us that large fires are a natural phenomenon of the southern California chaparral dominated landscape.

- While, small fires were frequent in the past, they did not effectively control or contain large events from occurring. Even in present day landscapes, wind-driven fire events (i.e. Santa Ana fires) can burn over, through and around recently burned landscapes that would be a deterrent to fires in normal weather conditions.

- We believe that the frequent fires of the past are a reflection of Native American burning practices meant as a means of landscape management and manipulation. Preliminary analysis suggests that fire frequencies reconstructed near known Native American settlements are higher than those reconstructed in areas not known to have been frequented by these peoples. However, further work needs to be done to provide a more robust understanding of the spatial and temporal patterns of Native American use of fire in this region.

- We generated mean fire return intervals (MFI) for both large and small sized fire events across all three forests. While these MFIs are often the most cited result from dendrochronology studies, they are often not used in the current context. For example, when a study cites a MFI of 10 years, in nearly all dendrochronology work, that refers to a fire of a certain size which has occurred somewhere within the sampled landscape once every ten years (on average). It does not mean that a fire occurs at the same point in a forest every ten years (on average). The ecological reality of those two situations is extremely different, especially in the case of chaparral.

- There were instances that we observed, in the tree-ring record, fires occurring at intervals of less than 10-15 years and were recorded by the same individual tree. In these limited cases, we do find that fires in southern California chaparral can occur at high frequencies. We don't know what the ecologic impact was following those events. Given what well-respected research has shown us, it is unlikely that many of the chaparral species in those areas survived the event based on life history traits and modern day observations. However, like the influence of Native Americans on fire regimes, we need to acknowledge the substantial impact the introduction of non-native species has had upon our landscapes. Prior to the mid 1800s, we lacked many of the now invasive non-native species that are abundant today. And those that were present were far more limited in their extent than in the present day. Unlike we see on the modern day landscape, when fire frequencies exceeded the ability of chaparral species to withstand closely repeated events, what followed was likely a barren landscape and not a field of aggressive, non-native species. These barren patches would slowly be colonized by native vegetation from surrounding areas or native species within the seedbank that survived the event. The ecological consequence was low, and would remain low to this day, if the suite of quick moving and ubiquitous non-native species were not present. That is certainly not the case now and any benefits gained by short fire frequencies would quickly be negated by the advance of non-native species at the expense of native.

- Dr. Keith J. Lombardo

Global Warming and Future Fire Regimes

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and Department of Ecology and Evolutionary Biology, University of California, Los Angeles, Los Angeles, California, United States

Summary
Climate and weather have long been noted as playing key roles in promoting wildfires. Global warming is generally expected to exacerbate fire problems. After reviewing the scientific studies of fire-climate relationships, the following conclusions can be drawn. 1) Annual temperature is a crude predictor of ecosystem responses since many processes respond to specific seasonal temperature signals. For example, on landscapes where past climate signals are correlated with fire activity, winter and autumn temperatures are generally irrelevant, but spring and summer temperatures play an important role. 2) Annual fire activity in California has been strongly influenced by climate only in the mid- to higher-elevation forests. However, in lower elevations throughout the state, but most particularly in southern California, fires in shrublands and grasslands have not been strongly correlated with annual variations in temperature during any season. 3) Past fire activity has been strongly influenced by land use activities (e.g., suppression of natural fires or human ignitions) and the impacts have been radically different in the northern and southern parts of the state. These two very different landscapes need to be viewed separately when planning future fire management practices. Global warming is occurring along with a number of other global changes that may have greater influences on future fire regimes, including population growth, changes in land management policy, shifts in vegetation types, and patterns of fire ignitions. All of these factors interact in complicated ways, making future forecasts a challenge.

Current realities
Temperature has always been a key factor in wildfire danger indices, and global warming predictions are a major concern. Historical analyses have shown that the *sine qua non* of a severe fire season in California forests is dry spring weather. It is now widely recognized that this relationship between climate and fire activity has important implications for climate change impacts on fire regimes of the future. However, it is important to recognize that temperature effects are seasonally dependent. Based on historical analysis of the last 100 years of fire records, it is apparent that warmer winters or warmer autumns have had no discernible effect on fire activity, whereas spring and summer temperatures do play a pivotal role. It cannot be stressed enough that this fire-climate relationship is largely restricted to montane coniferous forest ecosystems. Lower elevations and most elevations in the lower part of the state are generally less responsive to yearly changes in temperature. These latter landscapes appear to be more strongly affected by direct anthropogenic impacts, including timing and location of ignitions.

California covers a greater latitudinal range than any other western state and, as such, comprises a huge range of climates and very diverse fire regimes. In terms of California fire issues, the recent United States Forest Service (USFS) analysis illustrates two distinct regions within the state (Figure 1). Due to the success of a century of fire-suppression policy, forests in the Sierra Nevada and the northern portion of the state have experienced far fewer fires than historically recorded. In contrast, the nonforested landscapes in the southern part of the state, although managed with the same fire suppression policy, have not experienced a deficit of burning. This is in part due the difficulty of suppressing fires in chaparral-dominated landscapes coupled with the greater numbers of human-caused ignitions in this southern region.

Scientific opportunities and challenges
Balancing fire hazard reduction and resource protection poses a major challenge in a state as diverse as California. This equation plays out very differently in northern versus southern ecosystems in the state. Most of California's forests have historically experienced frequent low-severity understory burning, and both understory herbaceous and shrubby species as well as overstory tree species are adapted to this fire regime. Managing these landscapes with frequent prescription burning has the potential for both reducing fire hazard and enhancing these resources

Research needs for forested landscapes include parsing out the effects of global warming in different seasons and developing models that equate temperature increases with expected fire activity. Because the effect of global warming may have multiple effects, including increases in the length of fire season as well as increasing fire frequency, this research can be complicated. A further complication is that as fire frequency increases, the current ecosystem may be set on a trajectory for a different vegetation type with different fire regime characteristics.

In the southern half of the state there is a need for a better understanding of other global change issues that will potentially have greater impacts than global warming. In particular, there is need for understanding how population growth and patterns of growth will impact future fire regimes, something that is particularly critical in light of the fact that human activity accounts for more than 95% of all fires. Issues in need of research are causes of ignitions and placement of prefire fuel treatments. On these southern California landscapes, humans dominate the ignitions and as ignitions have increased over the past century there has been a well-documented conversion from native shrublands to nonnative grasslands. These latter systems are much more flammable, increasing the length of the fire season and frequency of burning, which feeds back into even greater landscape conversion and resource degradation. Additional issues in need of research are ignition causes and placement of prefire fuel treatments.

Policy issues
The U.S. Geological Survey has been an active player in the development of wildland fire management policy. The Cohesive Strategy developed by federal agencies has focused on using sound scientific evidence when choosing among alternative management approaches.

On an annual basis, California wildfires are responsible for a small portion of the total acreage burned in the Western United States. However they consume the bulk of federal fire suppression dollars. This is largely due to the high population density of metropolitan areas juxtaposed with watersheds of dangerous chaparral fuels. Since the beginning of the 21st century California has averaged a loss of 1,000 homes a year from wildfires mostly in the southern half of the state.

- **Forested ecosystems.** These ecosystems have missed fires due to past fire-suppression policy (Figure 1) that has resulted in substantial increases in forest fuels threatening to change fire regimes to high-intensity crown fires. Forest restoration requires prescription burning or other fuel reduction tactics. One of the primary constraints on burning is air-quality, which applies to both allowing wildland fires to burn, as well as prescription burning. One solution to reducing surface fuels (e.g., leaves, small dead wood) and ladder fuels (e.g., young trees) could be mechanical treatments. Constraints on this approach are the greatly increased costs associated with mechanical treatments plus economic limitations to such tactics on National Park Service lands. Making these treatments pay for themselves through commercial contracts raises serious issues about trees of value to be removed versus the impact on fire hazard. These are issues in need of serious discussion.

- **Nonforested ecosystems.** These landscapes comprise shrublands, which are the dominant plant community in southern California. Since the California State Legislature mandates a resource assessment of only timber and rangeland, these shrublands are perhaps not as well understood as is needed to assess their fire potential. On these landscapes the important global changes need to be viewed broadly to include more than climate change. Humans account for the vast majority of fires and human growth predictions are an order of magnitude greater than temperature warming in the coming decades.

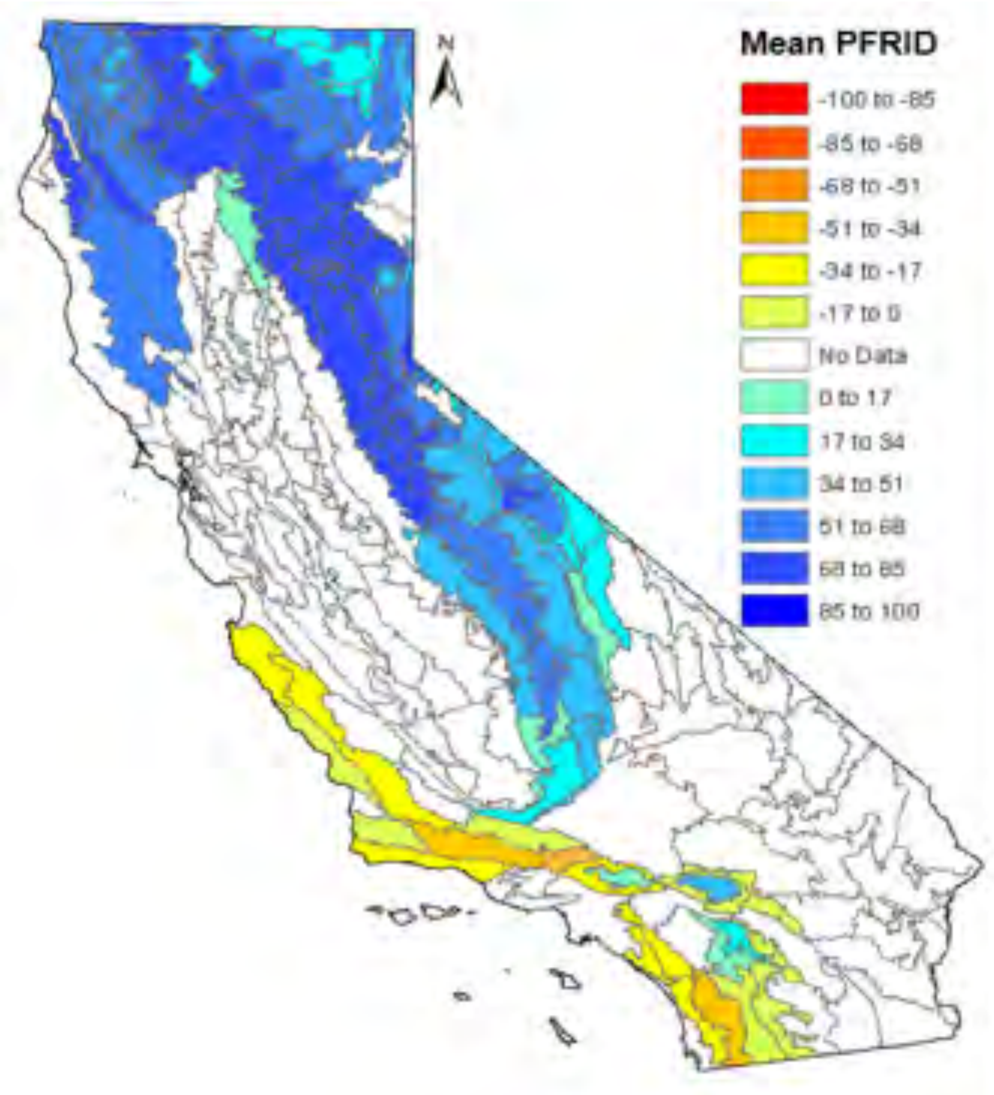
  Critical concerns do not only involve increased anthropogenic ignitions, but the spatial distribution of ignitions as well. In the south, the majority of fires that become catastrophic are ones that ignite in the interior and are driven by desert-to-ocean offshore winds known as Santa Ana winds. The more that development expands to the interior landscapes, the more likely such fires will increase in size. A closer relationship between fire management practices and land planning decisions could have positive effects.

  Throughout the western U.S. there has been an inordinate concern on landscape-level fuel treatments for handling wildfire issues. In southern California this issue is doubtful because catastrophic fires are driven more by factors such as weather than the state of the vegetation. We currently lack clear evidence that landscape-level fuel treatments change fire outcomes, particularly with respect to property losses. The model that seems to have the most support is that of fire management focused on “the house out,” which describes a concern on focusing fire hazard reduction at the house and Wildland Urban Interface (WUI) zone, and decreasing emphasis as one moves out on the landscape. Particularly in these nonforested landscapes, additional research is needed to determine the appropriate strategic placement of vegetation treatments.

  Other issues that need further discussion include the state-mandated “clearance” requirements. Total clearance is not required for defensible space and thus a change in terminology may enhance communication. Recognition that embers are a major source of home ignition points to the need for more research on specific changes in maintenance required to produce fire safe conditions. The role of evergreen trees as ember catchers needs further research as well.

*** A position paper prepared for presentation at the conference on* Water and Fire: Impacts of Climate Change*, convened by the Institute on Science for Global Policy (ISGP), April 10–11, 2016, at California State University, Sacramento*

Figure 1



Fire departure map for USFS lands in California. Areas in blue indicate landscapes that, relative to historical fire regimes, have missed fires and are in need of prescription burning or other related vegetation treatments. Yellow and orange represent landscapes that, despite a century of fire suppression, have had more fire than historically was the case and 'restoring' fire is not needed (from Safford and van de waters 2014).

January 12, 2018

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Board Analyst
Email: VegetationTreatment@bof.ca.gov

Dear Ms. Hannigan and Members of the Board,

We respectfully ask the Board to consider the following question: *Would the fuel treatments, as envisioned in the current Draft Programmatic Environmental Impact Report (DPEIR) for the state's proposed Vegetation Treatment Program (VTP), have prevented or significantly reduced the devastating loss of life and property during the 2017 Tubbs Fire, Nuns Fire, Atlas Fire, and the Thomas Fire?*

Based upon our preliminary research, we do not believe it would have.

Considering that such fires are predicted to increase due to climate change, the presence and continued building of communities in very high fire hazard zones, and the frequency of ignitions likely increasing with a growing population, the second question that we respectfully ask is:

How can we help the Board develop a comprehensive fire risk reduction plan that will save lives, property, and protect natural resources from the wildfires that are responsible for killing the most people and causing the most damage?

We understand that strategic fuel treatments beyond community boundaries can be effective fire suppression tools during non-wind-driven fire events. But those are not the fires that that cause the most devastating losses. In fact, we believe the DPEIR's current focus on vegetation treatments may facilitate the type of poor planning that allowed the kind of developments that were devastated by the 2017 wildfires.

We also understand the Board believes that vital fire risk reduction activities (e.g. regulating buildings in which people live, land planning, defensible space), "exist outside the scope of the proposed program." (1-15)

However, after witnessing multiple, wind-driven fires devastate so many lives and communities in which fuel treatments of the type the VTP envisions have had little impact, we believe it is time for the Board and Cal Fire to change their approach to a comprehensive one. Rather than focusing on **trying to control wildfires with fuel treatments,** a more effective approach would be to **focus on saving lives and property.**

If not the Board, the State Fire Marshal, and Cal Fire, who would be responsible for coordinating such a comprehensive program?

The number of lives lost and homes burned in the 2017 wildfires should inspire a new approach to fire protection, because what we have been doing (focusing on fuel) is not working.

Figures 1 and 2. Fountaingrove, Santa Rosa, California. Before and after the 2017 Tubbs Fire.

For example, nearly all of the homes in the Fountaingrove II community of Santa Rosa (Figs. 1 and 2) were built either right on or near ridgelines, geographical features well known for high fire danger (Fig. 3). Despite significant amounts of defensible space (note cluster of homes in the cul-de-sac at the lower right in Fig. 1), the homes were devastated by the Tubbs Fire. Also note the post-fire condition of forested areas in the upper portion of Figs. 1 and 2, and upper right in Fig. 3.

Figure 3. Ridgeline destruction at Fountaingrove II. This photo was taken looking north across the canyon from the former site of the orange-roofed home in the lower right corner of Figure 1.

As was the case in the 2007 Witch Creek Fire (IBHS 2009), it is likely nearly all these homes ignited from wind-blown embers and/or house to house radiant heat rather than flame contact from surrounding wildland vegetation.

The Fountaingrove II Open Space Maintenance Association had a rigorous fuel management program. The Association also understood well the danger of dry grasses and embers. In a 2013 bulletin to homeowners they warned,

> Over 90% of the homes destroyed by fires generated in the Wildlands are lost due to flying embers, not from fire lapping at their doorstep. A properly "Fire-scaped" home next to the Wildland Urban Interface can survive – if the owners have landscaped their property in a fire wise manner and keep all weeds and grasses clipped. (FOSMA 2013)

Yet the community was devastated in the Tubbs Fire.

We respectfully ask the Board, given that the Fountaingrove II community followed a vegetation management program with a focus similar to what is being proposed in the DPEIR, what policies would the Board help facilitate that would more successfully address the devastation caused to the community by the Tubbs Fire?

Figure 4. Coffey Park, Santa Rosa, California. Distance between community and wildland.

Figure 4 shows the community of Coffey Park in Santa Rosa (at the tip of the red arrow) devastated by the Tubbs Fire, and its distance from the nearest significant amount of wildland vegetation. – nearly a mile. Highway 101 was also between the community and the fire. Similar fire jumps over multi-lane highways and other large areas occurred during the 2003 Cedar Fire and the 2007 Witch Creek Fires in San Diego County.

Figure 5: Loss at Coffey Park. An older neighborhood far from the fire front, the entire community was ignited by a massive rain of embers driven by strong winds.

We respectfully ask the Board, what would have prevented these homes from igniting during the Tubbs Fire and what policies would the Board be willing to propose to prevent this kind of disaster in the future?

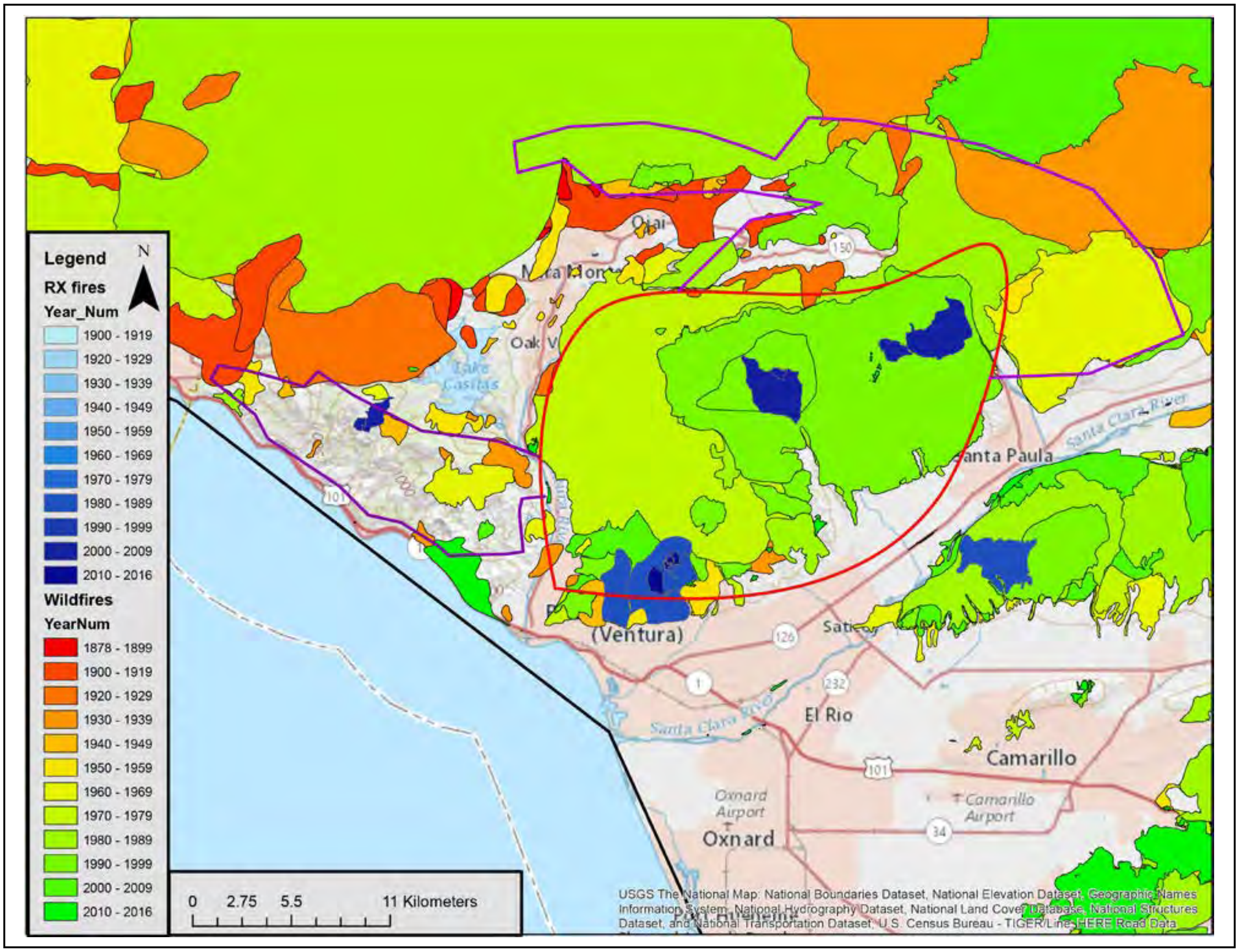


Figure 6. Prescribed burns within the Thomas Fire. The blue polygons show recent prescribed burns conducted by the Ventura County Fire Department. The red outline shows the rough perimeter of the Thomas Fire during its first hours. Source: USGS.

One of the key treatments described in the DPEIR is prescribed burning. As evidenced in Fig. 6 above, recent prescribed burn treatments (shown in blue) were not helpful in preventing the spread of the 2017 Thomas Fire.

The easternmost prescribed burn off Salt Marsh Road is approximately downwind of the probable origin of the Thomas Fire. The middle burn is in Aliso Canyon. Neither of these appear to have provided much in the way of anchor points for fire suppression activities.

Wind-driven fire generally spreads faster through grassy fuels than shrub fuels. Consequently, it is likely that the fire actually spread faster through these fuel treatments than it might have through the native shrubs that were present prior to treatment. Of course, with the high winds and low humidity that characterized the fire, nothing else really mattered than the extreme fire weather conditions.

The burns near the southern edge of the fire, in Hall, Barlow, and Sexton Canyons, have been worked on for years and were intended to create opportunities for controlling a fire.

In the initial run, the head fire spread 14 miles from the origin outside of Santa Paula to downtown Ventura in about five hours, spreading by ember ignited spot fires the entire way. This kind of fire behavior would likely defeat any fuel break - nothing on the ground can stop a fire that is basically flying through the air.

Further research is obviously needed to determine all the factors involved in the Thomas Fire's spread, but the consequences are clear from the damage assessment shown in Figure 7 below. The prescribed burns did little to protect the community. This is especially the case for the southernmost prescribed burn just above the northern edge of Ventura.

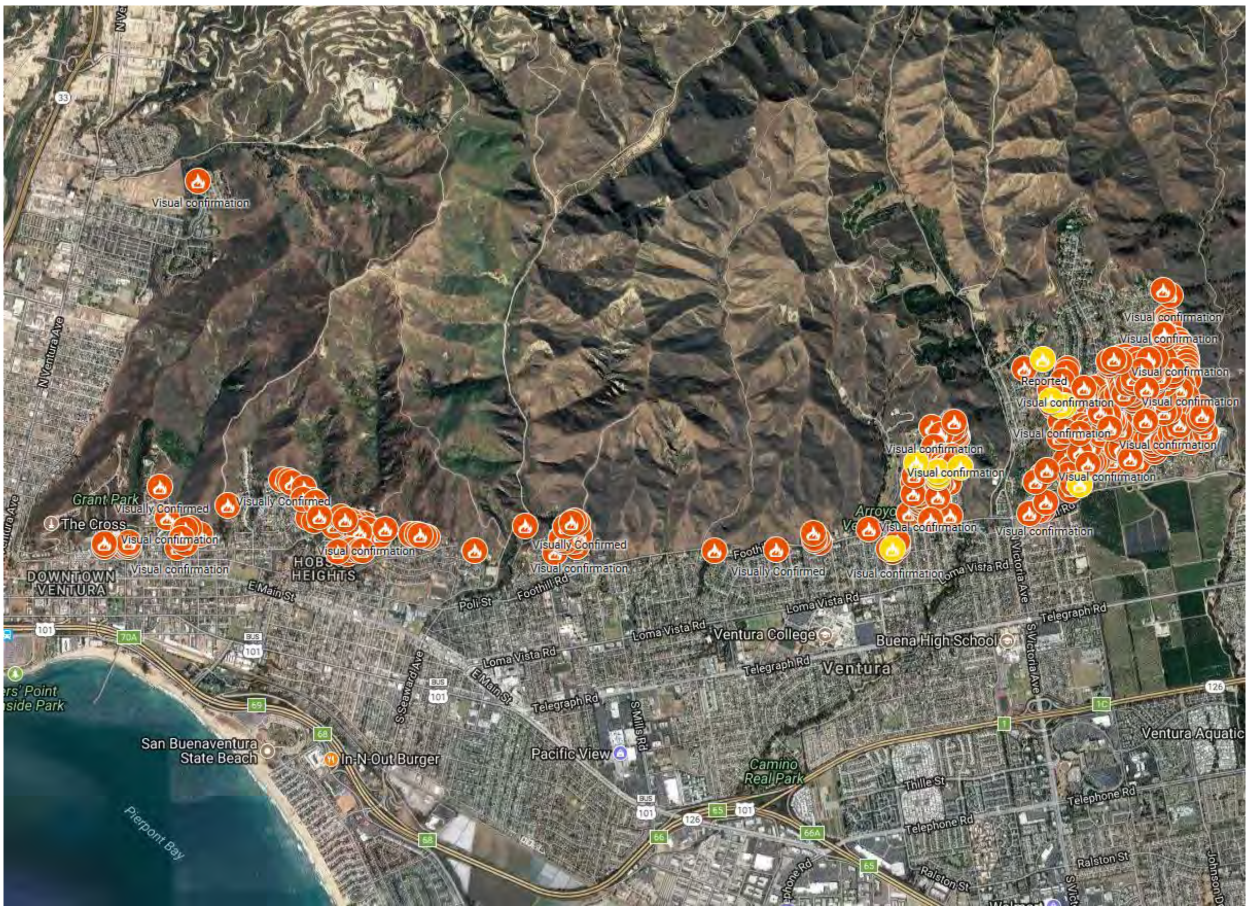
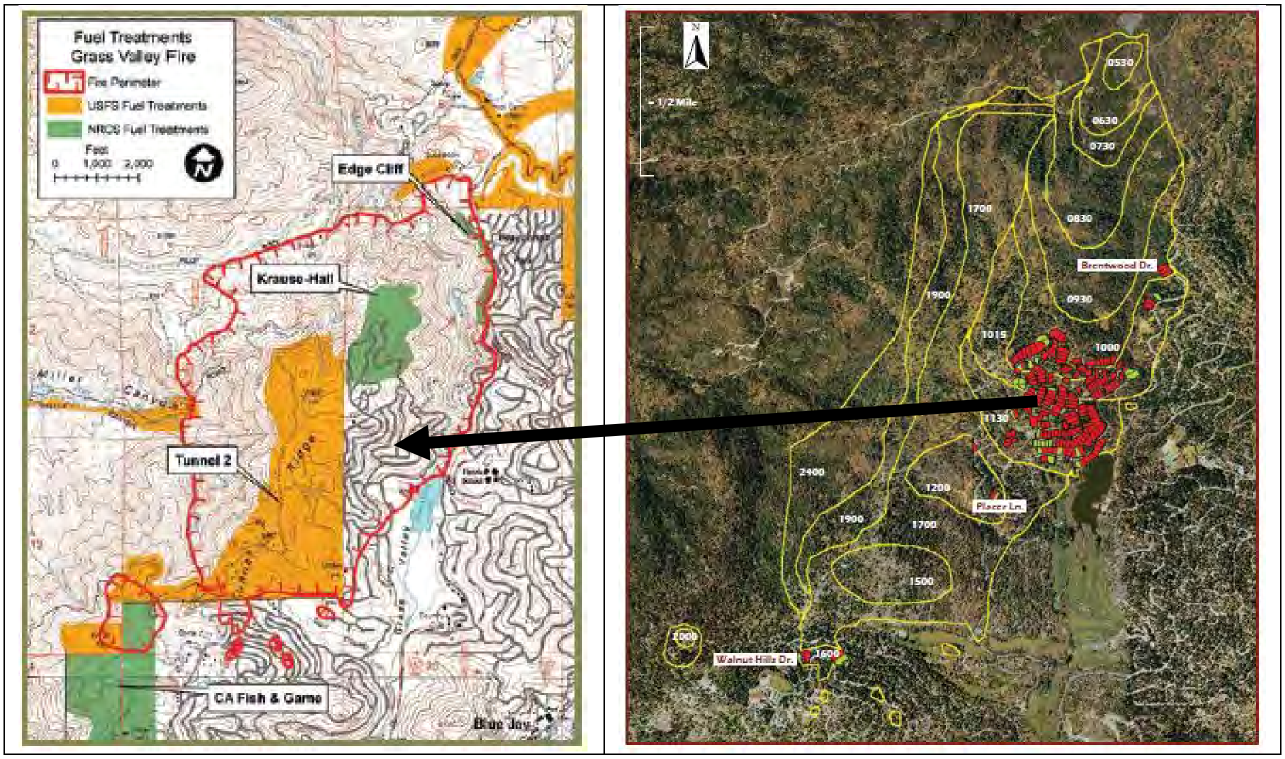


Figure 7. Home losses from the Thomas Fire on the edge of Ventura. Burned homes are indicated by orange dots. A prescribed burn was conducted just above the burned homes in the center middle of the image. Based on visual confirmation as of 12/8/2017: https://www.google.com/maps/d/viewer?mid=10S-m7mBzbjvG1rjiJ8wFAIbeG-F5VoKS&ll=34.2989948363656%2C-119.20525410881879&z=16



Figures 8 and 9. The 2007 Grass Valley Fire, Lake Arrowhead, California. Map on the left show fuel treatments as orange and green polygons (Rogers et al. 2008). Map on the right shows location of 174 homes burned in the fire (Cohen and Stratton 2008).

In the 2007 Grass Valley Fire, the US Forest Service and the Natural Resource Conservation Service conducted several fuel treatments around the community of Lake Arrowhead (Fig. 8). Reportedly, the fuel treatments performed as expected by allowing firefighters to engage the fire directly and reducing the rate of spread and intensity (Rogers et al. 2008). However, the end result for the community was much less positive. One hundred and seventy-four homes were lost (Fig. 9).

The comprehensive analysis of the Grass Valley Fire by US Forest Service scientists (Cohen and Stratton 2008) concluded that,

> Our post-burn examination revealed that most of the destroyed homes had green or unconsumed vegetation bordering the area of destruction. Often the area of home destruction involved more than one house. This indicates that home ignitions did not result from high intensity fire spread through vegetation that engulfed homes. The home ignitions primarily occurred within the HIZ due to surface fire contacting the home, firebrands accumulating on the home, or an adjacent burning structure.
>
> Home ignitions due to the wildfire were primarily from firebrands igniting homes directly and producing spot fires across roads in vegetation that could subsequently spread to homes.

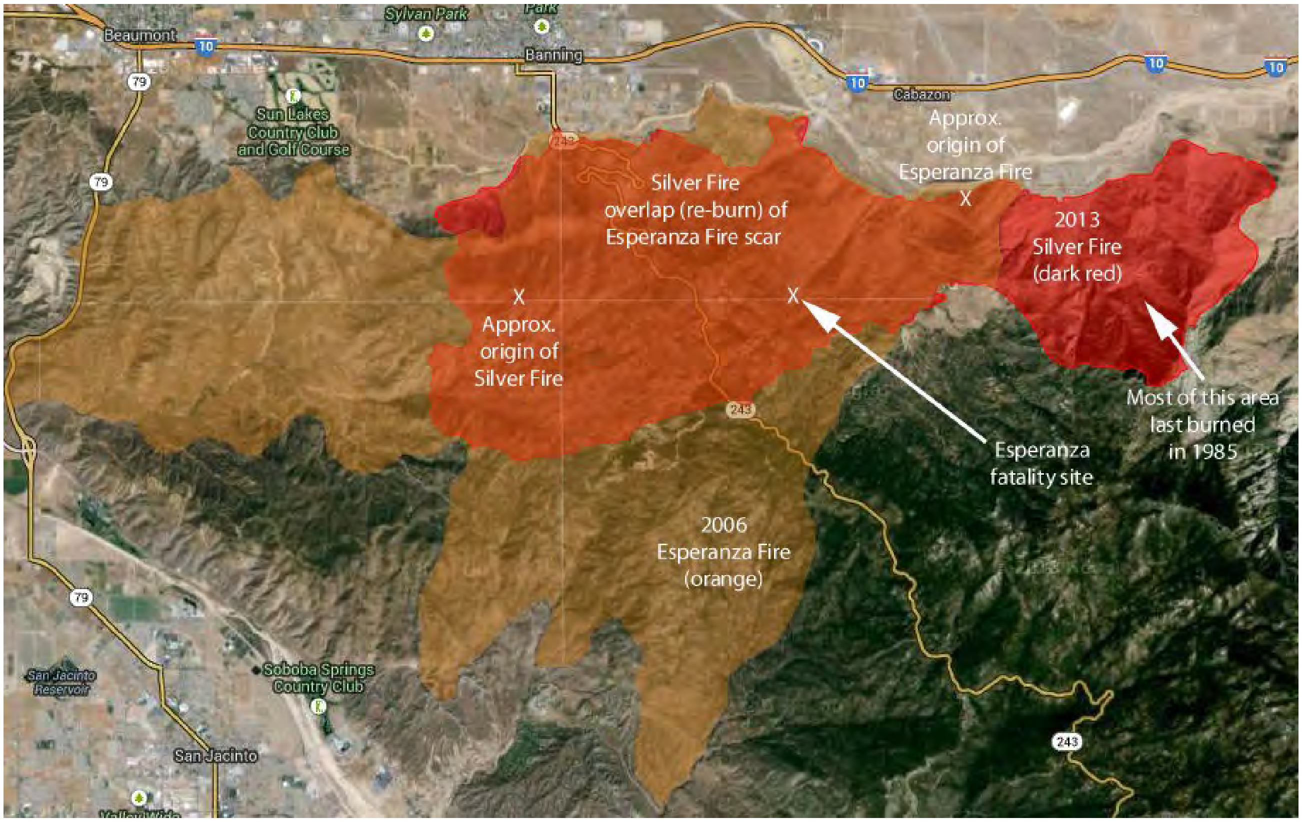


Figure 10. Reburned after seven years. The 2013 Silver Fire reburned almost entirely within the deadly 2006 Esperanza Fire scar near Banning, California.

The 2013 Silver Fire near Banning, California (Fig. 10) challenged the fundamental assumption of the DPEIR that treating older vegetation is an effective way to prevent devastating wildfires. Most of the fire burned through invasive weeds and young, desert chaparral that was recovering from the deadly 2006 Esperanza Fire. **Twenty-six homes were lost in a fire that was fueled by seven-year-old vegetation.**

There are numerous other examples and a number of solid research papers explaining why and how homes burn. What nearly all of them demonstrate can be best summarized by Cohen and Stratton (2008). They wrote,

> These incidents remind us to focus attention on the principal factors that contribute to a wildland-urban fire disaster—the home ignition zone.

We know that the DPEIR cites numerous case studies as well, claiming to show how effective fuel treatments can be. We also know there are numerous examples of when fire suppression has been facilitated when the flames meet previous fire perimeters. Suppression of the 2017 Thomas Fire was reportedly aided when its western edge interacted with the 2008 Tea and 2009 Jesusita Fire perimeters in the mountains above Santa Barbara. However, the weather changed as well.

We are not arguing with the fact that fuel modification is a tool that can be used to help control non-wind driven wildfires. However, the nearly exclusive focus, both financially and through time spent in planning, on fuel modification as presented in the DPEIR has failed us. How else can we account for the loss of 46 lives and more than 9,500 structures in wildfires from October to December this past year?

We believe nearly everyone can agree that that level of loss is unacceptable.

We also believe the current approach in dealing with fire risk as proposed in the DPEIR is also unacceptable. It is unacceptable not only because the DPEIR's justifications for its approach are flawed, but because **it does not deal with the wind-driven fires that cause nearly all the damage nor the actual causes that place people in harm's way in the first place.**

In its only attempt to address the effectiveness of fuel treatments involved in devastating wind-driven fires, the DPEIR cites Jin et al. (2015), listing the percentage of final fire perimeters found along fuel breaks (8%) and roads (56%) (4-38). Although fire perimeter data can be helpful, it does not necessarily indicate why a fire stopped where it did. Was it a change in the weather? Was it a back fire? Was it fuel moisture?

However, consistent with previous research, Jin et al. (2015) concluded **when examining the full data set that**,

> SA (Santa Ana wind-driven) fire probability did not depend on stand age, and we did not find evidence that age-dependent flammability limits SA fire spread…

In other words, whether it be young or old-growth, sparse or dense chaparral and associated plant communities (including highly flammable non-native grasses), wind-driven fires defy control and basically stop when the weather permits.

The omission of this conclusion by Jin et al. (2015) is symptomatic of a problem that plagues the entire DPEIR document – substandard research and a failure to provide substantial evidence that the program's goals, and the goals of the revised 2010 California Fire Plan, will be achieved.

Even though the latest draft makes efforts to incorporate relevant science, it often cherry picks statements out of papers that have nothing to do with the research cited, ignores the main conclusions of cited papers, or attempts to use anecdotal stories to diminish scientific findings contrary to the DPEIR's assumptions about fuel treatments.

As a consequence, among other reasons as described below, **the DPEIR lacks substantial evidence to support its conclusion that the environmental impacts of the program would be mitigated below the level of significance**, much less that the program would protect life, property, and the environment from exceptional, damaging wildfires.

As per CEQA Statute and Guidelines (AEP 2012),

> **CCR S. 15384.** [Substantial Evidence]
>
> (a) "**Substantial evidence**" as used in these guidelines means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. Whether a fair argument can be made that the project may have a significant effect on

> the environment is to be determined by examining the whole record before the lead agency. Argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, or evidence of social or economic impacts which do not contribute to or are not caused by physical impacts on the environment does not constitute substantial evidence.
>
> (b) Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts.
>
> (Note: Authority cited: Section 21083, Public Resources Code; References: Sections 21080, 21082.2, 21168, and 21168.5, Public Resources Code; No Oil, Inc. v. City of Los Angeles (1974) 13 Cal.3d 68; Running Fence Corp. v. Superior Court (1975) 51 Cal.App.3d 400; Friends of B Street v. City of Hayward (1980) 106 Cal.App.3d 988.)

We provide detailed examples of this problem plus other failings of the DPEIR in the analysis below.

As we have in the past, we urge the Board of Forestry and Cal Fire to produce a document that starts by responding to the following question, **"How do we protect lives and property from wildfire?"** instead of "How do we manage fuel?" These are two different questions resulting in two different answers. And focusing on lives and property suggests questions that are precluded by the fuel approach taken by the DPEIR - questions that allow us to address the actual problem (poor land planning) rather than just symptoms of the problem (lives lost, communities destroyed).

Such a powerful approach will challenge everyone to leverage their own experiences, be willing to consider new paradigms, and honestly collaborate with others, especially with those who have different perspectives. Otherwise, we will continue practices that have brought us to this point – increased loss of homes, increased loss of habitat, and increasing levels of carbon in our atmosphere.

After our testimony to the Board on August 26, 2015, the Board's Chair said that, "Scientists used to believe a lot of things that we've learned were wrong. So, we can't just wait around for science to find the correct answer. We need to move forward."

We do need to move forward, but we need to do so by utilizing *all the information available to us today,* not depend on outdated models, poor research, and incorrect assumptions.

Therefore, we urge the Board to prepare a revised DPEIR by correcting the errors and incorporating the suggested improvements below.

We owe it to ourselves and future generations to get it right this time, especially because the changing climate will not be forgiving if we continue to squander the opportunity.

1. Transparency Eliminated

We respectfully ask the Board, what was your rationale for removing recommendations from the California Fire Science Consortium regarding greater transparency from the DPEIR? How do you feel the removal of these recommendations will increase the achievement of the goals of the DPEIR?

The need for greater transparency and communication was a key recommendation in the California Fire Science Consortium's Panel Review Report of the 2012 DPEIR (CFSC 2014) whereby,

> Projects should include a general description of what is expected to be done. This should be announced at least six weeks before the project takes place. A more detailed description of the project, including project goals and scientifically-grounded rationale as to why and how these goals will be met, should be released prior to the project implementation. The monitoring plan and its results should be made publically available when completed.
>
> At minimum, the above information should be posted on a website database. Additional outreach via newsletters, TV, radio, or events may be included.

Following the Panel's recommendation, the Board included several opportunities for the public and local stakeholders to participate in the project process. For example, in the previous DPEIR, treatments in southern California old-growth chaparral would not take place, "without consultation regarding the potential for significant impacts with the CDFW and the CNPS."

In addition, the 2014 DPEIR (2-57) stated that,

> During the project planning phase provide a public workshop or public notice in a newspaper that is circulated locally describing the proposed project during the project planning phase for projects outside of the WUI. The notification will be used to inform stakeholders and to solicit information on the potential for significant impacts during the project planning phase.

Unfortunately, the Board eliminated these opportunities for community involvement and transparency in the current DPEIR.

2. Ecological Restoration

We respectfully ask the Board, why does the DPEIR claim "ecological restoration" (i.e. more fire) is needed in southern California chaparral (as per Condition Class maps) despite the fact that the document itself acknowledges that such areas are threatened by increasing fire frequencies? Why does the DPEIR claim fuel treatments can be used for "ecological *restoration" in northern California because of undocumented "observed recovery of these ecosystems post-fire" rather than cited research?*

The DPEIR repeatedly recognizes that chaparral,

> ... in its present state, and in consideration of the substantial pressure from human-caused or human-related fire, chaparral does not need more fire, it needs less. (4-179)

Then, in one of the most perplexing contradictions, the DPEIR identifies large stands of chaparral in need of "treatment" due to Condition Class 2 and 3 without specifying how such determinations have been made (Condition Class 2 and 3 according to the DPEIR are "areas where fire behavior is uncharacteristic and vegetation composition is altered due to the loss of the key components of an ecosystem"). Complicating such determinations is the fact that the DPEIR does not indicate if such stands are either positively or negatively deviating from their natural fire return intervals.

Complicating the situation further are maps showing where the DPEIR considers "ecological restoration" is needed. The maps are basically useless in determining where the sites are located. There is a database link that provides more detail in Appendix (A-7), but it requires the user to have expertise in GIS software. Such a critical component of the DPEIR needs to be made available in a form the general public can be able to use.

It appears the root of the problem is that the DPEIR is using a Condition Class data product that dates from 2003 (that is the only Condition Class GIS data product we can find from CDF-FRAP online today).

It appears that the cutoff date for fire history in that analysis for Condition Class is no more recent than 2002 and may be several years older than that. Fifteen of the 20 biggest fires in California history have occurred since 2002. None of them would be reflected in this 2003 analysis that Cal Fire proposes to base statewide public policy on in 2018 and beyond.

This is the same outdated, flawed data product we discussed in our previous comments. Cal Fire could easily recalculate Condition Class with modern methodology and newer, more robust data by using Safford et al. (2011).

The Board needs to update Cal Fire's Fire Return Interval Departure (FRID) and Condition Class (CC) data products if they intend to use them for any kind of actual decision-making. Using best available modern fire history data to calculate Condition Class can be easy. With Safford et al. (2011) methodology that calculates positive **and negative** departures from presumed historic fire frequency, the conceptual model for FRID (and Condition Class) was given some validity for the first time.

Data issues aside, as mentioned above, Cal Fire's 2003 model for Condition Class can only produce nonsensical maps because it does not distinguish between over- and under-burned departures from presumed prehistoric fire frequencies.

3. Substandard Research

We respectfully ask the Board what process was followed to ensure cited references applied to statements being made in the DPEIR and why that process continued to allow scientific work (e.g. Lombardo et al. 2009, Safford and Van de Water 2014) to be misrepresented after the problem was revealed in our comment letter of May 24, 2016 and after one of the affected scientists provided corrections?

We also respectfully ask the Board to acknowledge these and additional misrepresentations made in the latest DPEIR as described below (e.g. Syphard et al. 2011, Keeley and Syphard 2016) and make the necessary corrections.

A key recommendation of California Fire Science Consortium's Panel Review Report (CFSC 2014) was to, "Include additional scientific findings throughout," and that,

> … a sound scientific foundation should be reflected with each vegetation management plan providing a clear rationale for the selected action. This should be done by providing additional references to support claims in the VTDPEIR and including additional scientific concepts that are relevant to the planned actions.

The DPEIR has improved its review of the chaparral's fire regime. However, as to developing a sound scientific foundation for the plan, the DPEIR fails to do so.

A. Infrequent, Large Fires are the Pattern for Chaparral (Lombardo et al. 2009)

Inexplicably, after detailing the most recent research that has shown short fire return intervals in chaparral are unnatural, the DPEIR then misrepresents Lombardo et al. to suggest that science may yet find that such a conclusion incorrect.

> DPEIR (4-179)"… chaparral does not need more fire, it needs less (Safford and Van de Water, 2014). However, new scientific information could modify that conclusion in the future as it becomes available. For example tree-ring data collected by Lombardo et al. (2009) in bigcone Douglas-fir stands surrounded by chaparral indicate that both extensive and smaller fires were present in historical time."

Lombardo et al. make it very clear that smaller fires were generally centered in or around Douglas-fir stands and that, "the historical and modern records both imply that large, landscape-scale fires are inevitable in chaparral landscapes."

The DPEIR is cherry picking statements out of context from a scientific research paper to support its stated goals, statements that are contrary to the research paper's fundamental conclusions.

The paragraph quoted above is the exact wording used in the last two versions of the DPEIR.

The Board is ignoring information in the record in violation of CEQA and ignoring testimony and a letter from the lead author of the cited paper that it is misrepresenting the cited research (Appendix A).

B. Plan for the Future, Not the Past - Fires in Northern California (Safford and Van de Water 2014)

The DPEIR claims northern chaparral is not threatened by increased fire frequencies like southern chaparral and therefore can be treated (4-180). It cites Safford and Van de Water (2014) as support. This is a fallacy of incomplete evidence ("cherry picking"). While Safford and Van de Water do indeed note that northern California does not suffer the higher fire frequencies that southern California does, they also warn that,

> ...recent trends in fire activity, burned area, and fire severity suggest that the situation is rapidly changing as climate warms and fuels continue to accumulate.

The Safford and Van de Water paper also notes that increasing fire frequencies appear to be spreading into the northern Santa Lucia Range. It is likely this trend will continue to spread northward as climate change and population growth increase the potential for ignitions in the northern part of the state. The recent Thomas Fire in Ventura and Santa Barbara Counties and the 2017 firestorm in Napa and Sonoma Counties lend support to this hypothesis.

While dismissing increasing fire threats to northern chaparral in Chapter 4, the document's Introduction presents a contradiction by emphasizing the fact that fires in northern California are indeed increasing.

> DPEIR (1-3) These types of anthropogenic alterations are some of the reasons why wildfire frequency in Northern California has increased 18 percent in the period from 1970 to 2003...

If the Board desires the DPEIR to be a plan for the future, as the DPEIR explicitly states it is doing, it should plan for that future rather than depend on conditions of the past. It would also be helpful for the DPEIR to be internally consistent. In descriptions of the fire hazard severity zone analysis Cal Fire repeatedly states that the goal is to model fire hazard based on potential future (NOT current) conditions.

C. Justifying Ecological Restoration for Chaparral with a Logical Fallacy

The DPEIR follows its misrepresentation of the Safford and Van de Water paper with a non sequitur regarding ecological restoration of chaparral in northern California. Chaparral in southern California is currently being threatened by high fire frequencies. Chaparral in the north is presumably not being threatened by such high frequencies. Therefore, Cal Fire believes it can burn/masticate chaparral in the north for "ecological restoration" purposes. Not only does such a conclusion not follow the observations, there is no scientific evidence to support it.

Presumably the DPEIR's reason to suggest burning chaparral in northern California for "ecological restoration" is that it is too old. Yet the DPEIR recognizes that such an idea is based on outdated notions.

> Contrary to ideas that chaparral was subject to significant senescence, it was observed that the accumulation of dead and dying plants was part of a normal cycle of post fire stand development. (4-178)

The failure to correct this section for the second time (it appeared in the previous DPEIR as well) is perplexing since CNPS and we offered testimony specifically discussing these errors. We wrote in our letter of October 27, 2015 (Appendix B),

> "There is NO research that supports this claim (treating northern chaparral for ecological purposes). In fact, a study just released by the Joint Fire Science Program indicates that there are indeed ecological trade-offs in reducing chaparral fire hazard in northern California (Wilkin, et al. 2015). Clearance of chaparral has also been recently suspected of increasing the spread of Lyme disease in vertebrates (Newman et al. 2015).
>
> The Draft EIR also appears to be assuming that climate change will not modify northern California in a way that will replicate increased fire patterns found in southern California chaparral. This is in opposition to USFS research. Safford and Van de Water (2014) suggest chaparral type conversion is spreading northward into the northern Santa Lucia Range and may likely continue to spread as climate change and population growth increase the potential for ignitions."

The artificial truncation of northern and southern California chaparral is not based on research or ecological realities. The DPEIR needs to correct this error and recognize that chaparral, California's most extensive plant community, can be threatened by increasing fire frequencies throughout the state. In addition, the DPEIR needs to recognize that any treatment of chaparral should be viewed as a **resource sacrifice** unless proven otherwise.

Ironically, the issue of "cumulative impacts to chaparral communities from program treatments and wildfires" is cited as an Area of Controversy in the DPEIR (2-54). As such, the topic should have been addressed in a thorough, scientific manner.

Claiming that chaparral in northern California can be treated for ecological benefit continues to be one of the most significant errors in the DPEIR.

D. Prescribed Fire and Seeds (Keeley and Fotheringham, 1998)

> DPEIR (3-18) Prescribed burning elicits a host of ecological interactions potentially important to restoration in an environment, including release from plant competition, greater access to light and water, nutrient enrichment, destruction of germination retardants, and the beneficial effects of smoke on plant germination (Keeley and Fotheringham, 1998).

The DPEIR also incorrectly uses this paper to support the positive benefits of prescribed fire for restoration. This paper actually deals with seed germination of chaparral plant species in southern California, the very same region that the DPEIR acknowledges as being threatened by too much fire.

In fact, prescribed burning in chaparral has been shown to cause ecological damage when burns are usually conducted, during winter or spring. In a comprehensive review of the literature regarding the ecological impacts of prescribed burning, Knapp et al. (2009) wrote,

> Observations suggest that vegetation response to such prescribed burns often differs from response to natural wildfires, with reduced germination of certain herbs and potentially altered species composition.

E. Political Testimonies/Reports are Not Scientific Citations

A significant number of references used to support statements in the DPEIR are from testimony or reports to Congress. While such references can provide overviews, many are too broad or political in nature to be of any use in developing a scientific foundation. And because such references are not peer-reviewed, there is no mechanism for determining how factual, evidence-based, or scientifically accurate they are.

McKelvey et al. (1996), a report to Congress on the forest of the Sierra Nevada, is cited out of context to support the notion that, “prescribed fire is believed to benefit the overall health of fire adapted ecosystems” (4-186). While true for some Sierra Nevada forests, this is not true for chaparral. This represents a chronic problem in the DPEIR.

The reference to Bonnickson (2003) (2-10) was his testimony provided during a politically charged Congressional hearing after the 2003 fires. Much of the content is opinion, not scientific fact.

Finally, we were surprised to see that the Board chose to use a quote from Secretary of the Interior Ryan Zinke from a political press release to lead the DPEIR’s introduction (E-2).

> It is well settled that the steady accumulation of vegetation in areas that have historically burned at frequent intervals exacerbates fuel conditions and often leads to larger and higher-intensity fires…

Excepting the fact that it is far from settled that accumulating vegetation leads to larger fires, this statement only applies to some forested systems below 7,000 feet. In addition, most of the wildfire risk in California is within areas that have little to do with the kind of ecosystem the secretary appears to be describing.

We respectfully ask the Board what the rationale was in choosing to use a quote from a politically polarizing individual who has no background in wildfire, is on the record making *misleading claims to promote logging in the Katahdin Woods National Monument, and appears to advocate logging in national parks (Zinke 2017, McKean 2018).*

Does such a quote belong in a collaborative, non-partisan planning document?

F. Raising Doubt Over Established Science

> DPEIR (4-176): Studies are indicating a difference in data regarding type conversion or invasive spread of exotic/non-native species. Although these studies have differing methodologies and analysis characteristics, they offer an insight to the challenges in evaluating encroachment of non-native species. One study looked at the disturbance of plant communities after fuel break construction used for firefighting activity. This study identified potential impacts to the ratio of native and non-native species in the study area, which consisted of chaparral/grassland mosaic on an ecological reserve (Moroney and Rundel, 2013). However, another study found overall type conversion of existing species composition in chaparral may be difficult and rare across a landscape (Meng et al., 2014).

The risk of type conversion and the spread of invasive species due to fuel break construction, soil disturbance, or high fire frequency in chaparral is an established fact (Zedler et al. 1983, Haidinger and Keeley 1993, Jacobson et al 2004, Brooks et al. 2004, Merrriam et al. 2006).

Characterizing the evaluation of non-native species as challenging and citing one inconclusive paper (Meng et al. 2014) to raise doubts about type conversion occurring in chaparral reflects the DPEIR's inconsistent attitude toward the degradation of native shrubland ecosystems. On pages following the above quote, the DPEIR states,

> Burning in southern chaparral systems, to enhance ecological function, at intervals shorter than natural fire return frequencies, may lead to adverse ecological results. (4-180)

then

> For these reasons, an ecological rationale for fuel treatments in shrub dominated and co-dominated ecosystems in northern California can be used. (4-180)

The problem with Meng et al. is that it makes conclusions not justified by the collected data. The paper begins by raising some skepticism about the ability of repeat fire to affect type conversion by pointing out the difficulty early 20th-century range managers experienced in using fire to "improve" ranges that were supposedly plagued by chaparral. These managers typically relied on herbicides and mechanical destruction for thorough replacement of shrubs to more useful grazing lands. However, as pointed out by Keeley and Brennan (2012), managers only utilize fire under narrow prescription conditions, which are generally not capable of carrying repeat fires at short fire return intervals; hence, their difficulty in meeting their objective. In contrast, wildfires typically burn outside prescription with 100 kilometer/hr (about 62 mile/hr) wind gusts and relative humidity less than five percent.

Then by using remote sensing, Meng et al. attempted to answer the question of how extensive type conversion is due to repeat fires occurring in the last decade. While the technique cannot address the changes in diversity and species composition that are known to occur with short interval fires, it has some potential for viewing grosser changes in functional types such as shrubs and annual plants. Although these authors concluded that widespread type conversion is not an immediate threat in southern California, this conclusion deserves closer scrutiny since documenting fire-related vegetation change across large landscapes over just a 25-year period using remote sensing is fraught with potential errors.

One reason for error is that numerous spatially and temporally different human and biophysical factors can influence the process of post-fire recovery; these factors should be controlled for before attribution can be determined. In the Meng et al. paper, the control and overlap areas were located on somewhat adjacent, but very different parts of the landscape that varied by factors such as aspect, terrain, or soil type. The areas could have also experienced different landscape disturbance legacies. This is especially possible given the topographic complexity of the region and researchers' use of the California's Fire Resource and Assessment Program's Fire History Database (FRAP) for discerning precise stand ages. This database is broadly useful for management planning but must be used carefully in a research context.

For example, Keeley et al. (2008) found across 250 sites that the FRAP database did not accurately portray stand age (as determined by ring counts) for 47% of the sites, presumably due to the scale at which fires are mapped and by generally ignoring fires less than 40 hectares (100 acres) in size. This is a fundamental problem the DPEIR does not recognize.

Another concern is that the Meng et al. method of documenting vegetation change may not be sensitive enough to resolve gradual shifts in composition that would likely occur after only one repeat fire event. They used a vegetation index derived from remotely sensed imagery from a satellite as a way of assessing vegetation "cover," or "greenness" of each 30-meter pixel of the image. Because different pigments are stimulated by different parts of the light spectrum, this index essentially assesses chlorophyll content, which is correlated with biomass and assumed to represent the relative cover of evergreen shrubs. However, it does not account for differences among chaparral species, whose composition in the plots was unknown. Additionally, different species of chaparral have varying sensitivities to repeat fires and thus it might require multiple repeat fires of differing intervals to discern enough vegetation change that it would be detected by this index.

Given that vegetation change is likely a gradual, cumulative process, the results reported by Meng et al., contrary to their conclusions, are actually consistent with a potential for widespread chaparral conversion. Slightly more than half of the area that burned twice in their study did have lower cover, as defined by the index, than the control. Given enough fire on the landscape over a long enough period of time, gradual shifts may result in significant change and impact.

Before the DPEIR cites a paper that raises doubts about long confirmed research, it should closely examine the data and the conclusions. Just because a paper appears to confirm a particular position, does not mean it actually does.

G. Overgeneralized "Park-like" Forests

Contrary to the assertions made in Chapter 2 of the DPEIR, historical forests of California were highly variable in density. The notion that many were "generally open and park-like" is an over-generalized statement that has been challenged by a significant number of researchers. This fact has been ignored by the DPEIR.

While many forested areas below 7,000 feet have missed fire cycles and it is likely that a small portion of California's forests were "open", many more were probably closer to being moderately to very dense. Recent investigations have proposed that historical forests may have been 2-3 times denser than has been suggested in recent USFS studies (Baker 2014, Hanson and Odion 2016 a, Baker and Hanson 2017).

Mixed-intensity fire in mixed-conifer and yellow pine forests is essential to maintain and enhance native biodiversity in California's forests. Many species depend on the unique habitat created by mixed-intensity fires, including large fires and large high-intensity fire patches (Tingley et al. 2016).

The DPEIR also ignores recent research which finds that increased logging may not reduce fire intensity (Bradley et al. 2016). Nor is the DPEIR's assumption about fire and water flows consistent with current science (Boisrame et al. 2016). Post-fire sedimentation is natural after fires and occurs in pulses that wane within a relatively short period of time post-fire, whereas post-fire logging creates chronic sedimentation that lasts for many years (Wagenbrenner et al. 2015).

H. Incorrect citations

The Sugihara et al. 2006 citation, an introductory chapter in a book about fire in California is used nine times within Chapter 4. We searched for the specific DPEIR points the citation was supposed to be supporting within the Sugihara et al. work, but were unable do so in most instances. In other words, the statement the DPEIR is using the citation to support does not exist within the Sugihara et al. reference.

Regardless, using an introductory book chapter multiple times to establish a scientific foundation for the DPEIR is inappropriate. Original peer-reviewed research needs to be used and the research needs to be double checked to verify that cited references are in fact relevant to the point in question.

4. Mischaracterizing Fuel Treatment Research

We respectfully ask the Board if it has conducted a cost/benefit analysis of fuel treatment/fuel break construction and use in order to support its support of such activities?

Searching for Support Where There is None (Keeley and Syphard 2016)

> DPEIR (4-55): The impacts of fire suppression have changed the historical fire activity in the 20th century, and prescribed fire is a tool that can help maintain appropriate fire regimes (Keeley and Syphard, 2016).

Keeley and Syphard (2016) never concluded this. The paper is an analysis of projecting future fire regimes based on climate models. There is one sentence in the entire paper that mentions prescribed burning (pg. 10), but it is merely a reference to another paper. Citing Keeley and Syphard to support a claim about prescribed burning is inconsistent with the standards of academic research.

Anecdotal Information is Not a Substitute for Science (Syphard et al. 2011)

One of the primary advantages of scientific research is that it can filter out biases and opinions formed from anecdotal evidence by examining large sets of data. However, the DPEIR depends heavily on anecdotal evidence, sometimes to discount scientific research.

> DPEIR (2-23): There is also a level of uncertainty in the scientific literature on the effectiveness of fuel breaks that are staffed by fire suppression personnel (Syphard et al., 2011). Effectiveness can be impacted by the type of treatment used (prescribed fire, herbivory, mechanical tools, etc), position on the landscape, condition of surrounding vegetation, time since treatment, and the seasonality and weather conditions during the wildfire(s) intersecting the treatment. Due to these variables, the scientific evidence on the effectiveness of treatment suffers from some limitations of the ability to extrapolate beyond the study area. While not controlled experiments, there are case studies that CAL FIRE and other local fire agencies have developed that can point to site specific treatments that helped suppression efforts. The Toro Creek Fire Case Study within this section is a good example, as well as several others in Chapter 4.1.5.2.

There are two Syphard et al. (2011) papers in the DPEIR reference list, but they are improperly identified so it is unclear which one the document is referencing. But the one titled, “Comparing the role of fuel breaks across southern California national forests,” assembled a very large data set - a spatial database of fuel breaks and fires from the last 30 years in all four national forests in southern California. The researchers also interviewed firefighters.

The study indicated that on average, 23% of the fires studied intersected fuel breaks. During those intersections, fuel breaks helped about half the time, but “only when they facilitated fire management, primarily by providing access for firefighting activities.”

But more relevant to the goals of the DPEIR is the following conclusion from Syphard et al.:

> …this study strongly supports the notion of constructing fuel breaks along the wildland–

> urban interface where firefighters will have better access to the fuel breaks, and where the fuel breaks will provide an immediate line of defense adjacent to homes that are at risk. The case studies from all four national forests demonstrate that fuel breaks will not stop fires without firefighter presence. Therefore, constructing fuel breaks in remote, backcountry locations will do little to save homes during a wildfire because most firefighters will be needed to protect the wildland–urban interface, and fires will not be stopped by those fuel breaks that are located farther away.

Misrepresenting Research (Reinhardt et al. 2008)

The scientific research shows that the most effective way to protect lives and property is to focus directly in and around where people live. Perhaps unknowingly, the DPEIR references research that supports this approach (Reinhardt et al. 2008), but incorrectly cites it as supporting the vegetation management program.

> DPEIR (2-7): There is strong scientific agreement that the use of fuel treatments helps to reduce the impact and damage from wildfires (Reinhardt et al., 2008; Safford et al., 2009; Schoennagel and Nelson, 2011). This objective seeks to reduce the size of fires through the use of appropriate vegetation treatments. The assumption is that decreasing fire size will have a resulting decrease on overall fire suppression costs.

Here is what the cited Reinhardt et al. paper actually says:

Treating fuels to reduce fire occurrence, fire size, or amount of burned area is ultimately both futile and counter-productive. In the long run, fuel treatments are a sustainable management option only if they increase the acceptability of wildfire.

In such situations, destruction in the WUI is primarily a result of the flammability of the residential areas themselves, rather than the flammability of the adjacent wildlands. It may not be necessary or effective to treat fuels in adjacent areas in order to suppress fires before they reach homes; rather, it is the treatment of the fuels immediately proximate to the residences, and the degree to which the residential structures themselves can ignite that determine if the residences are vulnerable.

By reducing the flammability of structures, WUI fuel treatments can be designed such that an extreme wildfire can occur in the WUI without having a residential fire disaster. Although general wildfire control efforts may not benefit from fuel treatments during extreme fire behavior, fuel modifications can significantly change outcome of a wildfire within a treatment area. Research has shown that a home's characteristics and its immediate surroundings principally determine the WUI ignition potential during extreme wildfire behavior.

It is a natural mistake to assume that a successful fuel treatment program will result in reduced suppression expenditures. Suppression expenditures rarely depend directly on fuel conditions, but rather on fire location and on what resources are allocated to suppression. The only certain way to reduce suppression expenditures is to make a decision to spend less money suppressing fires.

Fuel Breaks – does the cost justify the benefit?

> DPEIR (4-38): An article by Syphard et al. (2011) conducted a spatial analysis of the Los Padres National Forest in southern California and concluded that fires stopped at fuel breaks 46 percent of the time. Preexisting fuel breaks allowed fire suppression activity to take advantage of the lighter fuels along the ridge lines to cut control lines. This was useful in both the wilderness areas (utilizing hand line and hose lays) and areas outside the wilderness where heavy equipment could aid in suppression efforts (Syphard et al.,2011).

The DPEIR mischaracterizes Syphard et al. (2011) and places the research in the wrong context. What the paper shows is that only 20 out of 95 fires intersected fuel breaks, fuel breaks stopped only one fire without firefighters present, and that fuel breaks were ineffective under severe fire-weather conditions.

> A key conclusion by Syphard et al. that the DPEIR ignored was the following:
>
> Although fuel breaks surrounding communities clearly serve an important role in creating a safe space for firefighting activities, fuel breaks in remote areas and in areas that rarely or never intersect fires have a lower probability to serve a beneficial function. It is important to consider strategic placement in terms of values at risk, near communities and the WUI, in shrubland ecosystems or other areas where the resource benefits of fuel treatments have not been demonstrated as they have been in forests. Despite strong arguments for locating fuel breaks near communities where protection is most needed (Winter *et al*. 2002; Halsey 2005; Keeley *et al*. 2009*b*), most fuel break proposals continue to be located in more remote wildland areas (Ingalsbee 2005; Schoennagel *et al*. 2009). Other finer-scale factors may also be important for strategic placement (e.g. placing them on ridgelines or other landscape features that offer tactical advantages; Ingalsbee 2005). It is also important to consider that many homes are not ignited owing to direct fire spread, but from firebrands (embers), and more research is needed on the location of fuel breaks relative to firebrand production and structure exposure (Mell *et al*. 2010).

The question of examining the actual cost/benefit of fuel break construction/use is also an important issue. In a recent paper from the University of Montana (Naughton and Barnett 2017), researchers found that,

> There exists an assumption within the wildland fire science and management community that investments in fuel treatments will result in decreased future fire management costs. In order for this to manifest, wildland fires must interact with fuel treatments during the lifespan that treatments remain effective. Our finding that 6.7%

> of treatments on federal lands between 1999 and 2012 were encountered by a subsequent fire by 2013, and that only 7.7% of the total treated area was burned by a subsequent fire through 2013, raises questions over the validity of such an assumption.

The observation that back country fuel modifications are generally not effective in stopping fires and, as a consequence, haven't generated any significant reductions in total annual area burned in southern California, has been confirmed by other research as well (Keeley et al. 2009, Syphard et al. 2011).

Global surveys concerning fuel modifications have also demonstrated that even very large amounts of strategic fuel modification are not very effective in reducing total areas burned. This research makes a compelling case that constructing and maintaining large fuel treatments is not the most effective use of fire risk reduction resources (Price et al. 2015, Price et al. 2015b).

Additional research also questions the entire concept of pouring millions of dollars into trying to suppress wildfires. As Bridge et al. (2005), in examining fires in the boreal forests of Canada, writes,

> … it seems that in large-area burned years, the conditions are such that the sheer number of fire starts and their quick rate of spread can overwhelm fire management agencies (KPMG 1999), and it is unlikely that suppression can significantly influence the total area burned.
>
> Thus, to date there is insufficient empirical evidence that fire suppression has significantly changed the fire cycle in the boreal forest of Ontario.

If the Board intends to establish an effective fire risk reduction program, it should investigate research that not only supports its assumptions, but also questions them. The DPEIR does not do this.

A WUI Without Scientific Merit

The DPEIR claims a 1.5-mile wide Wildland Urban Interface (WUI) is necessary because this is assumed to be the approximate distance embers can be carried from the fire front (4-33). The DPEIR dismisses concerns that its definition of the WUI is too large an area because Cal Fire staff overheard USFS representatives from the Cleveland National Forest talk about a 6-mile wide WUI buffer (4-33). Casual conversations are not legitimate scientific references.

The only citation the DPEIR uses for support is the Sierra Nevada Forest Plan Amendment. (3-38) This is a serious misrepresentation. The Amendment does not provide any evidence for a 1.5-mile WUI, but rather is a management document that established an arbitrary distance to determine the number of homes/communities affected by the Plan.

Ironically, the DPEIR discounts a smaller WUI, such as the 1,000-foot version in one of the alternatives (3-38), because, "A review of the literature found no scientific basis to limiting WUI treatments to 1,000 feet."

This perspective is more appropriate for the DPEIR's 1.5-mile WUI as there is significant evidence indicating fuel treatments even beyond 300 feet (the length of a football field) are excessive for the purpose of reducing fire risk to communities (see Cohen's extensive research, e.g. Cohen 2004).

In DPEIR Appendix A, "Characterizing the Fire Threat to Wildland-Urban Interface Areas in California" is equally unscientific and does not provide the necessary information to properly assess the characteristics of the WUI.

For example, Figure 1 does not distinguish fuel types, slope conditions, how heat per unit area and rate of spread is estimated/modeled/calculated. The axes are not mentioned in the descriptions. Another important point omitted from this section is that flame length as an indicator of fire risk varies by vegetation type – 12-foot flame lengths in conifer forests are routine, but not in grasslands.

As a tool, Figure 1 is not useful.

Considering the expense and extensive environmental damage that can occur with fuel treatments, the Board should base the size of the WUI on available science, not arbitrary numbers (see Appendix C: Ember Behavior: Why the 1.5-mile WUI is Excessive).

Finally, the Board needs to reconsider how the WUI is defined in order to help us address the actual issues that are causing so many losses due to wildfires – poor land planning. Gregory Simon (2017) makes this clear in his book, "Flame and Fortune in the American West." He writes,

> … the inadequacy of the WUI as a concept lies in its inability by itself to reveal the forces behind its own creation.

5. Inadequate Data

The maps provided in the DPEIR cannot provide enough information to properly assess the Program. They do not reflect data-rich research nor Cal Fire's expertise.

As in previous drafts, the DPEIR presents fuzzy, indistinct graphics reduced far beyond the point of legibility. At 72dpi screen resolution each fuzzy indistinct pixel represents about 3.5 miles (approximately 8,000 acres) on the ground.

This is not just about illegible maps, but one more example of a much larger, systemic problem mentioned several times above. The Program must be based on a solid, statistically valid technical analysis, undertaken in good faith, based on appropriately solid, modern data, and peer-reviewed fire science. CEQA requires it. The current DPEIR does not follow this standard.

6. Circumventing CEQA

Throughout the document, the DPEIR completely ignores the necessary detail needed to determine if the Program will have significant impacts. Instead, it defers to managers at the individual project level because the Program is either too "large and complex" to consider the true environmental impacts within the DPEIR (4-198 among others), or too small because the projects average 260 acres (5-35 among others). By using the "Fallacy of Authority," the DPEIR claims without providing supporting evidence,

> Because of the amount of acreage eligible but not receiving treatment under the VTP, the proposed Program would likely result in a less than significant cumulative effect on biological resources at the bioregional scale. (5-33)

The DPEIR frequently follows up these claims, again without supporting evidence, with the suggestion that the Program may actually provide a net environmental gain because it may "decrease the frequency, extent, or severity of wildfire." (5-37)

Such rationales have no merit. There is a rich source of literature describing the potential impacts, both local and cumulative, of "fuel treatments" as well as the ecological benefits of high-severity fires in crown fire ecosystems. The DPEIR should adhere to the requirements of CEQA and determine the overall environmental impact of the Program, not pass the responsibility on to individual project managers via a checklist based on subjective opinions.

This failure to account for environmental impacts is troubling because it gives the impression that the DPEIR was not produced to comply with CEQA, but rather to accomplish its stated goal of streamlining the regulatory process (1-7). In fact, this is in line with the Board of Forestry's 2010 Strategic Fire Plan which endorses efforts to "remove regulatory barriers that limit hazardous fuel reduction activities" (Fire Plan Goal #5, objective "b").

Inadequate Standard Project Requirements (SPRs) and Mitigation Measures (MMs)

Even if the law allowed the lead agency to pass along all the environmental impact determinations/responsibilities to local project managers, the DPEIR's project checklist, Standard Project Requirements (SPRs), and Mitigation Measures (MM) make such a task impossible.

Mitigation Measures as per CEQA must be legally adequate. The DPEIR must demonstrate with solid evidence that Mitigation Measures are feasible, effective, and enforceable.

- Many of the Program's SPRs and MMs fail to provide enforceable procedures (via legally binding agreements) that will produce measurable effectiveness.
- Important terms are not defined such as "critical infrastructure," allowing for inconsistent implementation and unknown impacts of projects.
- Some SPRs and MMs are vague and allow for so much subjectivity that they are meaningless.

For example, despite the fact that MM BIO-2 appears to provide a mechanism to reduce the impact of "fuel treatments" in chaparral (4-211), it essentially requires little of the project manager for the following reasons:

Only southern chaparral. Without justification, the DPEIR excludes chaparral from BIO-2 except that which occurs in nine southern and central counties. As indicated above, the exclusion of chaparral in northern California by the DPEIR is not supported by scientific evidence.

Considering ecosystem values of chaparral removed. Inexplicitly, an important mitigation measure that was part of BIO-2 in the 2014 DPEIR (BIO-5, 2-57) was removed from the latest DPEIR:

> Take into account the local aesthetics, wildlife, and recreation of the shrub dominated subtype during the planning and implementation of the project.

This presumably means such concerns will not be taken into consideration.

Median fire return interval undefined. Although the DPEIR discusses fire return intervals, there is no guidance in the SPRs and MMs to assist the local manager in determining what this value happens to be. Given the fact that there is tremendous misunderstanding and resistance to accepting the latest science about this topic (Halsey and Syphard 2015), it is critical that the DPEIR addresses this issue within the SPRs and MMs.

Critical infrastructure/forest health undefined. The project manager may dismiss BIO-2 if a proposed project is not deemed necessary to protect "critical infrastructure" or "forest health." Neither term is defined, therefore a project can be approved that destroys valuable, old-growth chaparral because again, the DPEIR does not provide the necessary guidelines.

Projects causing significant environmental harm are not speculative. One such project occurred July 4, 2013 when Cal Fire conducted a prescribed burn in the San Felipe Valley Wildlife Area, San Diego County. The approximately 100-acre fire escaped and burned 2,781 acres, causing significant damage to an old-growth stand of rare desert chaparral in addition to other plant communities.

Cal Fire's partial justification for the project was that it would provide "indirect community protection to Julian and Shelter Valley." This justification was erroneous. Julian is 4.5 miles distant to the project location and 2,000 feet higher in elevation. Shelter Valley is 6 miles distant with extremely light, arid vegetation between it and the project. The project also violated the land management plan for the site and was out of prescription when ignited (CCI 2013).

Clear, unambiguous definitions are required to prevent this type of incident from occurring again. In addition, it would be helpful if the San Felipe escaped burn could be highlighted in a case study to help managers avoid similar situations rather than using case studies that merely confirm the Board's preferred program.

> **Preventing type-conversion unspecified**. There are no guidelines on how to prevent the type conversion of native shrublands within the MMs. Since it is not the instant conversion of shrublands to non-native grasslands, but typically a gradual process, guidelines should be established to assist project managers to recognize the native shrubland's condition. Type-conversion in shrublands begins with the loss of biodiversity by the elimination of obligate seeding shrubs leading to a combination of resprouting shrubs and native sage scrub species or resprouters and alien grasses (Halsey and Syphard 2015). While still appearing to be "chaparral" to the casual observer, it is in fact a seriously compromised habitat.

BIO-2 is a prime example of how the DPEIR allows the project manager to make subjective decisions that may cause significant impacts without a reasonable opportunity for mitigation or independent oversight to assist in preventing such environmental harm.

Suggested Improvements to the Program to Reduce Fire Risk

- Reduce fire risk from the house out -

We are aware that the Board prefers to only deal with vegetation management, but if such a strategy does not protect lives and property during wind-driven fires, what is the point?

The Board and Cal Fire should stop focusing on modifying fuels in order to try to control wildfires and focus instead on saving lives and property by focusing directly on communities. The science is overwhelming in support of this approach. Schoennagel et al. (2017) offers some compelling options that will help us move in this direction:

> The majority of home building on fire-prone lands occurs in large part because incentives are misaligned, where risks are taken by homeowners and communities but others bear much of the cost if things go wrong. Therefore, getting incentives right is essential, with negative financial consequences for land-management decisions that increase risk and positive financial rewards for decisions that reduce risk. For example, shifting more of the wildfire protection cost and responsibility from federal to state, local, and private jurisdictions would better align wildfire risk with responsibility and provide meaningful incentives to reduce fire hazards and vulnerability before wildfires occur. Currently, much of the responsibility and financial burden for community protection from wildfire falls on public land-management agencies. This arrangement developed at a time when few residential communities were embedded in fire-prone areas. Land-management agencies cannot continue to protect vulnerable residential communities in a densifying and expanding WUI that faces more wildfire (Moritz et al. 2014).
>
> Providing incentives for counties, communities, and homeowners to plan fire-safe residential development for both existing and new homes and discouraging new development on fire-prone lands will make communities safer (Calkin et al. 2014; Abrams et al. 2015; Syphard et al. 2013; Alexandre et al. 2016).

Changing incentives require policy changes, but such changes are achievable if properly organized. An example is requiring approving, local entities in charge of development (cities, counties) to assume responsibility for future losses due to wildfire and issue Fire Development Bonds for any development approved in a Very High Fire Hazard zone. These Bonds would be funded by a significant portion of the tax revenue that is generated by said development and the developer of the property. Residents could be responsible for a small portion of the Fire Development Bond as well. The bonds would be used to help pay for any damage caused by a future wildfire.

Such an approach would internalize the costs of fire hazards instead of forcing society to shoulder the burden. The ultimate goal would be to make development in Very High Fire Hazard zones prohibitively expensive.

All homes already within VHFH zones should be required to retrofit to improve fire safety within 20 years, similar to the code passed by the City of Los Angeles in 2016 to retrofit older buildings for earthquake safety.

A retrofit that is not typically used in California, but used effectively in Australia and Canada is external sprinklers (Mitchell 2005). Such an approach is uncommon because traditionally home fires started inside, hence the use of internal fire sprinklers. However, internal sprinklers are designed to save lives, not homes (Fig. 11 below).

External sprinklers, coupled with an independent water supply (swimming pool or water tank), should be required for all homes within very high fire hazard zones. Clusters of homes could be served by a community water tank that should be a requirement for every planned development.

Many residents have taken it upon themselves to retrofit their own homes with external sprinkler systems. Under-eave misters on the Conniry/Beasley home played a critical role in allowing the structure to survive the 2003 Cedar Fire in San Diego County. The home was located in a canyon where many homes and lives were lost to the flames (Conniry 2008).

Figure 11. External sprinklers. As a wildfire approaches, external sprinklers wet the structure at risk, the surrounding environment, and increase the local humidity to prevent ignition. Photo: A conference center in New South Wales, Australia.

The Current DPEIR

If the intent is to maximize the impact of the VTP in terms of saving lives, property, and natural resources it needs to focus directly on the WUI. **Alternative A comes closest to this approach, however the 1.5-mile distance for the WUI needs to be drastically reduced and based on scientific research.**

This alternative also needs to be rewritten to emphasize the reduction of fire risk by using "from the house out" approach (as discussed above) – proper land planning, reducing home flammability, properly maintained defensible space, community fire safe retrofits (e.g. external sprinklers, ember-resistant vents, ignition resistant internal framing), then strategic fuel treatments within 1,000 feet of a community if needed.

Many county fire programs support "from the house out" concept. Cal Fire promotes this strategy too, and has since at least 2007.
http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_faqs#gen01

We urge the Board to reconfigure the DPEIR so that it incorporates the entire fire risk reduction equation, not just vegetation management. Additional suggestions on how to do so, and examples of programs that have worked, can be found in Appendix D: An Appeal to California's Fire Agencies.

Other recommended improvements to the DPEIR include:

- Detail impacts. Examine possible direct and cumulative impacts and develop legally adequate mitigations for those impacts as required by CEQA.

- Recognize all chaparral as potentially threatened. Chaparral in the central and northern part of the state will likely be threatened by higher fire frequencies as the climate continues to change. There is no ecological rationale for fuel treatments in shrub dominated ecosystems in northern or southern California.

- Define terms. Define all terms utilized in the text needed to ensure consistency in use such as critical infrastructure, forest health, etc.

- WUI distance. Establish a reasonable distance for the WUI by using science rather than anecdotal information.

- **Redefine the WUI.** Redefine the WUI to include the social environment as well as the physical. "From a management perspective this approach suggests that decision-makers pay greater attention to the systemic causes of change, risk, and vulnerability – factors that are quite often implicated in policies promoting increased wealth and profit opportunities for stakeholder in urban and exurban settings" (Simon 2017).

- Redefine defensible space. The present definition includes the term clearing, implying that defensible space should be clear of all vegetation. Creating large areas of clearance with little or no vegetation creates a **"bowling alley" for embers**. Without the interference of thinned, lightly irrigated vegetation, the house becomes the perfect ember catcher. In addition, when a fire front hits a bare fuel break or clearance area, a shower of embers is often released (Koo et al. 2012).

- Research support for conclusions. Conclusions in a DPEIR need to be supported by research, not by employing the Fallacy of Authority.

- Maintain consistency and research quality. Eliminate contradictions, errors in citations, and inconsistencies throughout the document.

- Consultation on chaparral treatments. All projects involving old-growth chaparral (in excess of 60 years from the last fire) should be developed in consultation and in agreement with the California Native Plant Society as was previously indicated in the prior DPEIR.

- Account for biodiversity in chaparral. Incorporate into the cumulative impact analysis how biodiversity may be impacted by the Program. See Halsey and Keeley (2016).

- Increase transparency. Develop a web-based public notification process for projects similar to the US Forest Service SOPA website. For example: http://www.fs.fed.us/sopa/forest-level.php?110502

- Plan for the future. Base project need, selection, and treatment approach, on projected climate change scenarios, not past, anecdotal experiences.

- Reassess the efficacy of back country fuel modifications.

- Proper account of carbon sequestration. Recalculate the potential increase in atmospheric carbon from the proposed program to account for the loss of below ground carbon sequestration in healthy chaparral communities due fuel treatments. The assumption in the DPEIR that the proposed program will have no significant impact on atmospheric carbon is based on incomplete calculations.

With the impacts of human-caused climate change accumulating much faster than even the most severe predictions, it is imperative that every policy we implement from here on out must honestly and exhaustively examine how such policy can facilitate the reduction of carbon in the atmosphere and the protection of what natural environment remains.

The current DPEIR fails to do so.

The DPEIR assumes all the projects will work out properly and treated plant communities will not type convert to low carbon sequestering grasslands because of the Program's project requirements. These requirements are legally inadequate and unenforceable.

The DPEIR fails to account for the loss of underground carbon storage with the concomitant loss of above ground shrub cover in shrublands, an important carbon sink (Jenerette and Chatterjee 2012, Luo 2007). The DPEIR also fails to address the research that has shown vegetation treatments often release more carbon than wildfires (Mitchell 2015, Law et al. 2013, Meigs et al. 2009).

By using assumptions based on anecdotal evidence and focusing on the short term (such as how to reduce flame lengths, remove dead trees, or increase the number of clearance projects), the DPEIR will likely exacerbate climate impacts, increase the loss of habitat, and fail to adequately accomplish its primary goal – protecting life and property from wildfires.

A final note.

At the May 25, 2016 California Fire Service Task Force on Climate Impacts, members of the task force were discussing changes that still needed to be accomplished to improve California's response to wildfires.

Orange County Fire Chief Jeff Bowman spoke up and distributed an After Action Report concerning the Southern California Wildfire Siege. He pointed out that its 95 recommendations for improving future responses to major fire incidents were nearly identical to those recommended by the Governor's Blue Ribbon Fire Commission after the 2003 wildfires.

Chief Bowman then asked everyone in the meeting to look at the date of the After Action Report. It was 1993, ten years prior to the Blue Ribbon Commission recommendations.

In 2018, we are still discussing.

We are hopeful the Board and Cal Fire will help change the conversation about how we address wildfire risk, improve the DPEIR so that it addresses how to save lives, property, and habitat, and turns to fire science for help in doing so.

Sincerely,

Richard W. Halsey, Director
California Chaparral Institute

Kathryn Phillips
Sierra Club California

Dan Silver, Executive Director
Endangered Habitats League

Jeff Kuyper
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Marily Woodhouse, Director
Battle Creek Alliance

Michael Welborn, President
Friends of Harbors, Beaches and Parks

Jim Wells

Susan A. Robinson
Ebbetts Pass Forest Watch

Brian Nowicki
Center for Biological Diversity

Ara Marderosian
Sequoia ForestKeeper

Dan McCarter, Vice President
Urban Creeks Council

Rob DiPerna
Environmental Protection Information Ctr

Attachments:

Appendix A. Understanding the Relationship between Fire/Chaparral - K.J. Lombardo
Appendix B. CCI letter of October 27, 2015
Appendix C. Ember Behavior: Why the 1.5-mile WUI is Excessive
Appendix D. An Appeal to California's Fire Agencies
Appendix E. CCI letter of May 24, 2016

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Review available at The Center for Western Priorities: https://medium.com/westwise/all-of-the-falsehoods-in-donald-trumps-secret-national-monuments-report-4f62904b9275

Appendix C

Ember Behavior: Why the 1.5 mile WUI is Excessive

The likelihood of an ember travelling 1.5 miles from a flaming front and igniting any single given house (or any other given small, discretely located type of potential receptive fuel) downwind is likely quite small. However, ignition by a single ember is usually not how most houses burn down.

If a structure lies downwind of a weather-driven wildfire, chances are excellent that a large number of shorter range embers will ignite everything that can burn between here and there, creating more embers all along the way, and allowing the head fire to blow hopscotch over, across, and through just about anything to reach that house. The collective fire spreading effect of all the embers makes the head fire's downwind progress all but unstoppable while the fire weather lasts.

Tracked in real time, the instantaneous rates of ember production and subsequent transport by turbulent, gusty winds must be very transient and highly dynamic. In general, averaged over time, it is likely most embers fall near the flaming front in a decay curve as you move further and further downwind of the instantaneous location of any flaming front. At 1.5 miles, the tail of the decay curve is likely quite small. Chances are a structure will burn when the flaming front is close and the site is under the “thicker” part of that ember distribution curve.

The rationale for fuel treatments in areas a long way upwind of a community is that they will produce some additional fire safety even if they can't stop the fire because they will reduce the density of embers falling on a structure or community. **Such a claim is conjectural at best.**

Since fires produce embers by the millions, and ignition probabilities likely approach 100% in very dry fire weather, it is not at all clear what value reducing ember density might actually have in protecting structures or helping firefighters reduce fire spread.

We are unaware of any recorded quantitative data on ember density-by-distance.

Firefighter experience and the research have shown that weather-driven wildfires tend to spread across landscapes with very little regard to fuel type, or age (Mortiz et al. 2004). This spread is mostly through a large number of separate spotting events that start a large number of new fires running out ahead of any fire's flaming front. If structures are in the way, then fire will spread up to them, go over, and around them, and then move on downwind.

Like the onset of a coming rainstorm, at a given location one might experience a single ember, then another, then two, then more and more, until the main flaming front comes through and the ember density gets heavy. Ember density will decline as the fire passes by and continues downwind.

Once there is a modest amount of defensible space around a structure to make the surface fire stop short of direct flame impingement (varies with terrain, often no more than 30ft) and to prevent ignition by radiant heating (100ft max), and to be safe in case of potential turbulent convective heating so firefighters can feel safe enough to stay and defend (up to 150ft?), then it's all about ember ignition. Whether any given structure burns or not has everything to do with **how receptive it is to ignition by windborne embers** when that unstoppable fire comes through.

That NIST report on structure loss during the 2007 Witch Creek Fire, and much of their subsequent work, documents very clearly that lots of structures with good defensible space of up to 100 or more feet can and do get ignited by embers. Firefighters or civilians onsite defending a structure do so primarily by extinguishing spot fires on and in the structure before they can get big.

http://www.nist.gov/el/fire_research/wildland/project_wui_data.cfm

http://nvlpubs.nist.gov/nistpubs/TechnicalNotes/NIST.TN.1796.pdf

This is exactly why risk reduction must work from the “house out.” All fire science points to this. Many county fire programs support this concept as well. Cal Fire promotes the "house out" strategy too, and has since at least 2007.

http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_faqs#gen01

Unfortunately, vegetation management gets the primary focus (please see Appendix B: An Appeal to California’s Fire Agencies).

Fire agencies, firefighters, fire scientists, and environmental groups are on the same page about this. What we've been fighting about all these years are questions about the efficacy of doing anything to “fuels” beyond the home ignition zone and beyond the largest plausible defensible space buffer.

The WUI as a concept should be determined by fire operation concerns of fighting fire at the edge of town. So WUI as a concept is all about defensible space and how much of that do we need.

USFS fire scientist Jack Cohen has clearly demonstrated that about 100ft is all any structure needs to avoid ignition by radiant heating from even the hottest wildfire on flat ground with little wind. Add those factors drive heat and convection horizontally and more space will be needed.

Let’s assume for discussion that a 300 ft defensible space would be desirable for doing point protection versus long, completely sideways flames that might be expected in the very most hazardous fire terrain imaginable. Three hundred feet of defensible space would be very excessive in all but the most pathological cases of structures built in terrain where no one should be living and no firefighters should be asked to make a stand against fire.

Three hundred feet is only 5% of the way to the 8,000ft (=1.5miles) that the DPEIR currently proposes everywhere.

So the 1.5 mile definition of WUI everywhere is excessive.

Ember travel distance

As far as we know, the longest distance spotting event documented in fire literature occurred on Feb 7, 2009 ("Black Saturday") during the 2009 Victoria, Australia firestorms. Spot fire ignitions from Bunyip Park were documented at 20km (approx 12 miles).

Below are two annotated references concerning that event and another from the recent Fort McMurray Fire in Alberta, Canada.

Campbell, Peter. 2010. 2009 Victorian bushfires.
Greenlivingpedia.org
http://www.greenlivingpedia.org/2009_Victorian_bushfires

Local weather stations on “Black Saturday” 2/7/2009 recorded sustained winds of approximately 30mph blowing nonstop from the N and NW for about 12 hours during the worst of the fires. The winds reversed direction during the course of the incident, blowing from the SE. This would be quite typical for a major Santa Ana wind event in southern California. In fact, Santa Ana winds often blow even stronger than this. The duration and the reversal are also typical of Santa Ana winds.

Daily high temperature was a record-setting 46.4degC (114degF). Relative humidity was as low as 5%. This is a higher temperature than we are ever likely to see in southern California, but our relative humidity often goes lower than this (to near zero) during our worst fire weather.

The area of Victoria State, Australia, had gone for a record-setting 38 days without any rain. Southern California’s seasonal drought is commonly 5-6 months.

Widespread and very long distance spotting was observed. Fire spread rates of up to 100km/hr (62 miles/hr) were observed. Fire spread through all types of land cover, including farmland, and forests where extensive fuel modification by Rx burning had been performed for fire safety. Fire officials emphasized that this fire was driven primarily by weather, not fuels.

The main fire at Bunyip Park was started by lightning. Several other fires in the area were confirmed or suspected to be arson.

Egan, Carmel and Steve Holland. 2009. Inferno terrorizes communities as it rages out of control. The Age, Feb 8, 2009.
http://www.theage.com.au/national/inferno-terrorises-communities-as-it-rages-out-of-control-20090207-80fw.html

> *The Bunyip Ridge inferno lived up to its menacing threat yesterday, bearing down on one tiny Gippsland community after another and forcing firefighters to retreat ahead of its towering fire head.*
>
> *More than 300 firefighters battled the three-kilometre-wide fire front before being forced to pull back as it made its run out of the state forest around 4pm towards the*

villages and towns of Labertouche, Tonimbuk, Longwarry, Drouin and Jindivick.

By 6pm, fanned by gale-force north-westerly winds, it had burnt 2400 hectares of forest and farmland and unknown numbers of homes and outbuildings.

Flaming embers started spot fires up to 20 kilometres to the south and threatened homes as far away as Warragul.

Ha, Tu Thanh. 2016. The perfect storm of conditions: here's how the blaze reached Fort McMurray, and why it spread so fast. The Globe and Mail. http://www.theglobeandmail.com/news/alberta/albertas-highway-of-fire/article29863650/

The fire that jumped over the Athabasca River was a spot fire, Mr. Schmitte said.

Mr. Burnett said he had seen situations where spotting enabled a forest fire to leap eight to 10 kilometres ahead of its main line.

Spot fires are also troublesome when they are near urban areas, he said, because embers ignite rooftops or rain gutters clogged with dead leaves and pine needles.

Cited Reference

Moritz, M.A., J.E. Keeley, E.A. Johnson, and A.A. Schaffner. 2004. Testing a basic assumption of shrubland fire management: Does the hazard of burning increase with the age of fuels? Frontiers in Ecology and the Environment. 2:67-72.

Appendix D

The 2017 Appeal to Planning and Fire Agencies After the Devastating Napa/Sonoma Wildfires

Emphasizing home flammability, fire safe land planning and the value of nature can save more homes during wildfires and help create healthier communities

In light of the devastating Napa/Sonoma wildfires, planning and fire agencies are urged to expand their approach to reduce loss of life and property to wildfires.

Currently, the primary message citizens hear is to clear native vegetation ("fuel") from around their homes. While creating defensible space is a critical component of fire risk reduction, it fails to address the main reason homes burn - embers landing on flammable materials in, on, or around the home, igniting the most dangerous concentration of fuel available, the house itself.

In addition, by designating native habitat as merely “fuel,” citizens are encouraged to see nature as something dangerous rather than a valuable part of their local community. **Intact natural habitat provides vital ecosystem services** that are necessary to maintain the health and well-being of surrounding human communities**.**

Fire risk reduction efforts must emphasize BOTH how to reduce home flammability and how to create defensible space without blaming nature. **Many homeowners have complied with defensible space regulations only to see their homes burn in a wildfire.**

Public education materials must make clear that without addressing the entire fire risk reduction equation your home has a greater chance of burning in a wildfire. This includes creating defensible space AND retrofitting flammable portions of homes such as,
- the replacement of wood shake roofing and siding
- installation of ember resistant attic vents
- removal of flammable landscaping plants such as Mexican fan palms and low-growing acacia
- removal of leaf litter from gutters and roofing
- removal of flammable materials near the home such as firewood, trash cans, wood fences, etc.
- roof/under eave low-flow exterior sprinklers

It also must be made clear to homeowners that by having well maintained and lightly irrigated vegetation within the outer 70 foot portion of the 100 foot defensible space zone can play an important role in protecting the home from flying embers and radiant heat. Bare earth clearance **creates a bowling alley for embers** and can actually increase fire risk if invaded by flammable, non-native weeds. In addition, research has shown that there is **no additional structure protection provided by clearing beyond 100 feet**, even on steep slopes, and the most important treatment zone is from 16-58 feet.

Applicable fire research and a comprehensive approach to home protection can be found here:
http://www.californiachaparral.org/bprotectingyourhome.html

Mountain communities learning to use federal grants to install ember-resistant vents and eliminate wood roofs, vital to reducing home loss during wildfires

David Yegge, a fire official with the Big Bear Fire Department, is about to submit his fourth grant proposal to the FEMA pre-disaster mitigation grant program to pay up to 70% of the cost of re-roofing homes with fire-safe materials in the Big Bear area of San Bernardino County. Yegge has also assisted the towns of Idyllwild and Lake Tahoe to do the same. The grant includes the installation of non-ember intrusion attic vents.

Yegge's first grant was for $1.3 million in 2008. He identified 525 wooden-roofed homes in need of retrofits in the community of Big Bear Lake. Only 67 remain. Helping to push homeowners to take advantage of the program is a forward-thinking, "no-shake-roof" ordinance passed by the Big Bear City Council in 2008 requiring roofing retrofits of all homes by this year. San Bernardino County passed a similar ordinance in 2009 for all mountain communities. Homeowners have until next year to comply. Such "future effect clause" ordinances can be models for other local governments that have jurisdiction over high fire hazard areas. "The California Legislature should adopt such an approach and Cal Fire should incorporate such retrofit programs into its new Vegetation Treatment Program," Halsey said.

In order to qualify for the FEMA grant, a cost/benefit analysis must be completed. "Our analysis indicated that $9.68 million would be saved in property loss for every $1 million awarded in grant funds," Yegge said. "FEMA couldn't believe the numbers until they saw the research conducted by then Cal Fire Assistant Chief Ethan Foote in the 1990s. There's a 51% reduction in risk by removing wooden roofs."

"The FEMA application process is challenging, but well worth it," said Edwina Scott, Executive Director of the Idyllwild Mountain Communities Fire Safe Council. "More than 120 Idyllwild homes are now safer because of the re-roofing program."

Additional Information

In California, the state agency that manages the grants is the Governor's Office of Emergency Services (Cal OES), Hazard Mitigation Grants Division. Cal OES is the go between agency and they decide what grants get funded based upon priority established by the State Hazard Mitigation Plan.

The Mountain Area Safety Taskforce re-roofing program:
http://www.thinisin.org/shake/

The San Bernardino County re-roofing ordinance:
http://www.thinisin.org/shake/images/DOWNLOADS/ORDINANCES/ord_4059.pdf

FEMA grant program:
http://www.fema.gov/pre-disaster-mitigation-grant-program

Appendix B

Letter to Governor Newsom
January 11, 2019

The Honorable Governor Gavin Newsom
State Capitol Building
Sacramento, CA 95814

Re: Saving Lives and Property from Wildfire January 11, 2019

Dear Governor Newsom,

Encouraged by the spirit of hope that your new administration brings to Sacramento, we urge you to take the lead in creating a new wildfire policy based on science rather than tradition.

Why? Because the traditional approach to wildfire protection is backward. It focuses on vegetation rather than what we want to protect – our homes and families.

Homes burn because they are flammable and are built on fire-prone landscapes. Most structures ignite during wildfires **because of flying embers** that can travel a mile or more from the fire front. This is why so many families have lost their homes even though they have complied with defensible space regulations – their homes were still vulnerable to embers. This is why communities far from wildland areas, like Coffey Park in Santa Rosa, have been destroyed during wildfire and why entire neighborhoods have burned to the ground while the trees around them have not (Fig.1). This is why fuel breaks, twelve-lane highways, and even large bodies of water fail to protect our homes during wind-driven wildfires.

However, there is hope. While wildfire is inevitable, the destruction of our communities is not.

Jack Cohen, a former lead fire scientist with the U.S. Forest Service, has demonstrated this through decades of research. To stop wildfire disasters in our communities we must accept some basic principles based on science, especially with climate change and increasing numbers of people living next to wildlands. First among them is that **the wildfire problem is a home ignition problem, not a wildfire control problem.**

Focusing on forests and dead trees far from our communities most at risk or habitat clearance projects that have little value during wind-driven fires will only guarantee more of the same – continued catastrophic losses.

To stop the destruction of our communities by wildfire we must focus on strategies that will work in our rapidly changing environment: **reduce the flammability of existing communities and prevent new ones from being built in very high fire hazard severity zones.**

Figure 1. Camp Fire, showing the devastation of homes in the Kilcrease Circle community of Paradise. Note the surrounding green, mature forest with little or no scorching. The homes were not burned by a high-intensity crown fire, but were ignited by embers, followed by home-to-home ignitions. Photo: Digital Globe, a Maxar company via Reuters, 11/17/2018.

With your leadership, we can break free from the traditional and nearly exclusive focus on habitat clearance and logging that fails to address why our communities are burning.

The current focus on forests and dead trees is especially misguided because the vast majority of lives and homes lost to wildfire in California had little to nothing to do with vegetation in forests (Fig. 2). And while it is reasonable to remove hazard trees immediately adjacent to roads and homes and to thin forests immediately around communities, thinning projects in the forest away from communities do nothing to protect houses and lives, while costing a fortune and often damaging forest ecosystems.

The traditional focus incorrectly sees nature only as "fuel." Eliminate the "fuel," the thinking goes, and we can control the fires. This misguided emphasis on fuel has become so powerful that some mistakenly view *all* of our forests, native shrublands, and even grasslands as "overgrown" tangles ready to ignite, instead of valuable natural resources.

This focus is failing us. We must look at the problem from the house outward, rather than from the wildland in. The state must take a larger role in regulating development to prevent local agencies from ignoring known wildfire risks as the city of Santa Rosa ignored with their approval of the Fountaingrove community in the 1990s (Fig. 3). The state should follow the lead of communities like Idyllwild and Big Bear and support retrofitting homes with proven safety features that reduce flammability – ember-resistant vents, fire-resistant roofing and siding, and exterior sprinklers – and focus vegetation management on the immediate 100 feet surrounding homes.

We must address the conditions that are the cause of so many lost lives and communities: wind-driven wildfires and the embers they produce that ignite flammable structures placed in harm's way. We have provided a list of recommendations below that will help us do so.

As we incorporate this new way of thinking into our wildfire response, we must also endeavor to implement the changes we seek. We have had difficulty doing so in the past as many of the recommendations made after previous fire storms have never been realized.

We urge you to break with the conventions that have led to the crisis and focus fire risk reduction efforts where it matters most – directly on our homes and communities, and *where* we build them. This will allow us to tailor fire policy to the needs of our families most at risk.

Sincerely,

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An online version of this letter with active links to the cited references is available at this web address: http://www.californiachaparral.com/bprotectingyourhome.html

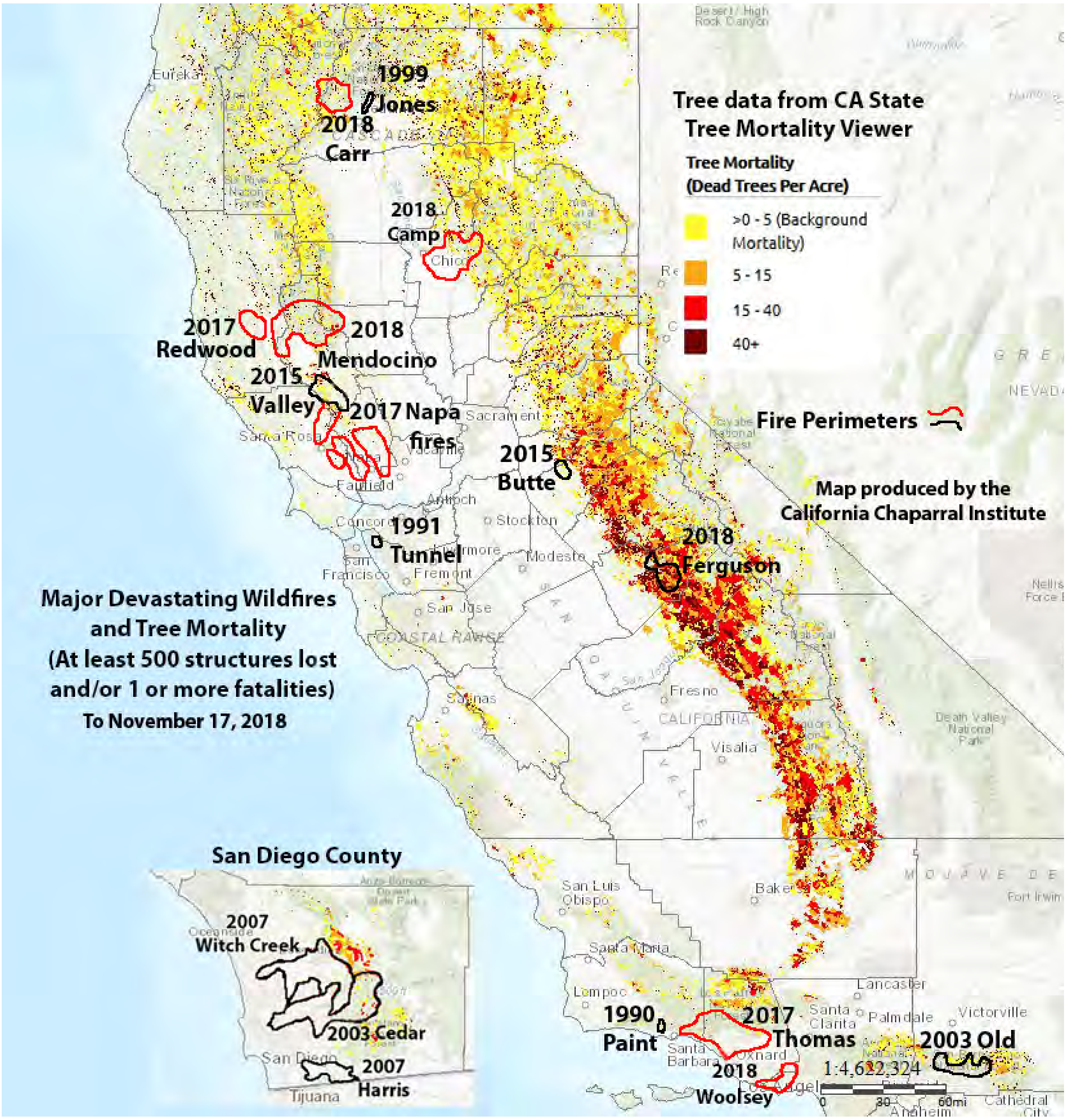

Figure 2. Overlay of California's most devastating wildfires with dead tree distribution. With the exception of the 2018 Ferguson Fire, concentrations of dead trees did not play a role in the state's most devasting wildfires as per Cal Fire's official list. In addition, the majority of California's most devasting wildfires have not involved forests.

12 Recommendations

1. Shift the focus to saving lives, property, and natural habitats rather than trying to control wildfires. These are two different goals with two radically different solutions. This new focus can help existing communities withstand wind-driven wildfires, and improve alerts and evacuation procedures and programs, instead of continually pouring resources into modifying a natural environment that continually grows back and will always be subject to wildfire (Moritz et al. 2014).

2. Quantify all the risks, statewide. Conduct a comprehensive examination of fire and debris flow hazards across the state. Require the use of fire hazard maps, post-fire debris flow maps, and local expertise to play a significant role in planning/development/zoning decisions. One of the primary objectives in land use planning should be to prevent developers and local planning departments from putting people in harm's way.

3. Start at the structure first when developing local plans to protect homes. Develop action plans in Community Wildfire Protection Plans (CWPPs), similar in scope and detail to those traditionally developed for vegetation treatments, that address the wildfire protection issue from the house outward, rather than from the wildland in. Require that Fire Safe Councils include structure and community retrofits as a significant portion of their activities. This approach has been endorsed by a strong consensus of fire scientists and **is illustrated well in this National Fire Protection Association video with Dr. Jack Cohen: (https://youtu.be/vL_syp1ZScM)**.

4. Encourage retrofits. Promote legislation on the state and local level to assist existing neighborhoods-at-risk in retrofitting homes with known safety features (e.g., *exterior* sprinklers, ember-resistant vents, replacing flammable roofing and siding with fire-resistant Class A material, etc.). Establish a tax rebate program, similar to the one used to promote the installation of solar panels, to encourage homeowners to install such fire safety features. Provide incentives to roofing companies to develop and provide *exterior* sprinkler systems for homes.

The effectiveness of exterior sprinklers was proved during the 2007 wind-driven Ham Lake fire in Cook County, Minn., where they had been installed on 188 properties. All of those properties survived; more than 100 neighboring properties didn't. Federal Emergency Management Agency (FEMA) hazard mitigation grants had covered the majority of the cost of the sprinklers.

5. Identify all flammability risks. Create and promote a fire safety checklist that encourages the complete evaluation of a home's vulnerability to wildfire. Beyond structure flammability, it is imperative that this list cover flammable conditions around the home, such as the presence of dangerous ornamental vegetation, under-eave wooden fences/yard debris, and flammable weeds.

6. Help with grants. Promote legislation on the state and local level to assist community Fire Safe Councils in acquiring FEMA pre-disaster grants to assist homeowners in retrofitting their homes to reduce their flammability.

7. Comprehensive evacuation plans. Promote the development of clear evacuation/response plans that all communities can understand. Promote programs that will dedicate a regular time each year for communities to practice their evacuation plans.

8. Incentives to prevent building in very high fire hazard zones. Beyond restricting development in very high fire/flood hazard areas, the state could also internalize the costs of fire protection so developers assume the responsibility for possible losses caused by future wildfires and post-fire debris flows. Creating incentives to reduce or prevent development in very high fire/flood hazard areas like the Fountaingrove area in Santa Rosa is an achievable goal (Fig. 3).

The City of Monrovia implemented another creative approach – creating a wider urban-wildland buffer by purchasing parcels in high fire hazard zones.

> *Because the city's hillside acreage was both publicly and privately owned, the City Council decided to seek voter approval for two measures. The first designated city-owned foothill land as wilderness or recreational space and limited development on the private property. The other was a $10-million bond, the revenues from which would be used to purchase building sites from willing sellers. Both passed by a wide margin. In the end, Monrovia spent $24 million for 1,416 acres, paying off the bonds with parcel taxes and gaining an added benefit: a deeper urban-wildland buffer. (Miller 2018)*

Figure 3. The devastation of the Fountaingrove II community in Santa Rosa during the 2017 Tubbs Fire was predictable. The city was warned this area was too dangerous to place homes. The area had burned in a wind-driven fire in 1964. In 2001, the city's planning division issued a report concluding the development did not properly follow the city's general plan's goals and policies (Regalia et al. 2001).

9. Science-based defensible space guidelines. Expand defensible space guidelines so treatment and distances are based on science and recognize the physical impact of bare ground on ember movement, increased flammability due to the spread of invasive weeds, and increased erosion and sediment movement in watersheds. The research has clearly indicated that defensible space distances beyond 100 feet can be counterproductive.

10. Peer-reviewed Vegetation Treatment Program. Require Cal Fire to submit its latest Vegetation Treatment Program Environmental Impact Report (EIR) to an outside, independent, science-based, peer-review process prior to its public release for public comment. Such a review was required by the state legislature for the 2012 version. Require Cal Fire to follow the recommendations offered by the independent review committee in both the EIR's supporting background information and proposed action plan.

11. Establish an interdisciplinary, statewide Fire Preparedness Task Force (FPTF) versed in Catastrophic Risk Management (CRM) to evaluate our response to wildfire hazard. CRM is successful because it helps managers in high-risk organizations make better decisions by reducing their tendency to "normalize deviance," engendering a focus on positive data about operations while ignoring contrary data or small signs of trouble. Airlines use CRM to objectively analyze plane crashes, thereby creating safer planes. Without CRM, small deviations from standard operating procedures are often tolerated until disasters, such as the Deepwater Horizon offshore oil platform blow out, the Challenger Space Shuttle explosion, or unprecedented losses caused by the 2017 wildfires expose an organization's failures. Ensure that a majority of task force members can speak freely, enabling them to offer creative solutions, and that half of the membership is outside the fire profession.

12. Reduce human-caused ignitions. Since nearly all of California's devasting wildfires are human-caused, significant resources should be dedicated to reducing such ignitions. One of the objectives of the **FPTF** should be to develop a statewide action plan, in collaboration with land management agencies, Cal Trans (since many ignitions occur along roads), Cal Fire, and public utilities (since many of the largest fires have been caused by electrical transmission lines and equipment), to reduce the potential for human-caused ignitions. The following should be considered: underground placement of electrical lines, replacement of uninsulated wire, placement of roadside barriers to reduce vehicle-caused sparks/ignition sources, closure of public lands during periods of extreme fire danger, and increasing the number of enforcement personnel to monitor illegal access, campfire, gun use, etc. on public lands.

Additional Information:

1. A thorough analysis of Cal Fire's Vegetation Management Program:
http://www.californiachaparral.com/threatstochaparral/helpcalfireeir.html

2. Detailed research and proven strategies on how to protect communities from wildfire:
http://www.californiachaparral.com/bprotectingyourhome.html

3. Successful grant programs that help communities retrofit structures to reduce flammability:
http://www.californiachaparral.com/fire/apleaitstheembers.html

4. Detailed analysis on assumptions concerning the 2017 Napa/Sonoma wildfires.
https://californiachaparralblog.wordpress.com/2018/01/17/how-we-think-about-nature-and-fire/

Resources:

Diane Vaughan (dv2146@columbia.edu)
Dept. of Sociology, Columbia University, specializing in how high-risk industries are prone to "normalizing deviance," whereby managers focus on positive data about their operations and tune out contrary data/signs of trouble until disasters necessitate a change in thinking (e.g. Deepwater Horizon offshore oil rig, Challenger Space Shuttle, 2018 wildfires)

Karlene Roberts (karlene@haas.berkeley.edu)
Center for Catastrophic Risk Management, UC Berkeley, specializing in the design and management of high reliability organizations.

Gregory L. Simon (gregory.simon@ucdenver.edu)
Dept. of Geography & Environmental Sciences, University of Colorado, Denver, specializing in human-environment relations, environmental policy and governance, and how the Wildland-Urban-Interface as a concept fails to reveal the forces behind its own creation.

Brian Fennessy
Fire Chief, Orange County Fire Authority, specializing in developing and managing quality municipal fire organizations.

Jack Cohen
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A Primer on Wildland Fire in California

1. Fuel treatments are often ineffective in stopping wind-driven fires and can create more flammable conditions by type-converting native chaparral shrublands to highly-flammable, non-native weedy grasslands.

There are dozens of anecdotal stories about fires stopping at previous fire scars. There is no doubt that happens. However, when assessing the use of scarce resources, government agencies must consider the cost/benefit of every action to ensure they are not spending money on efforts that are less effective than others.

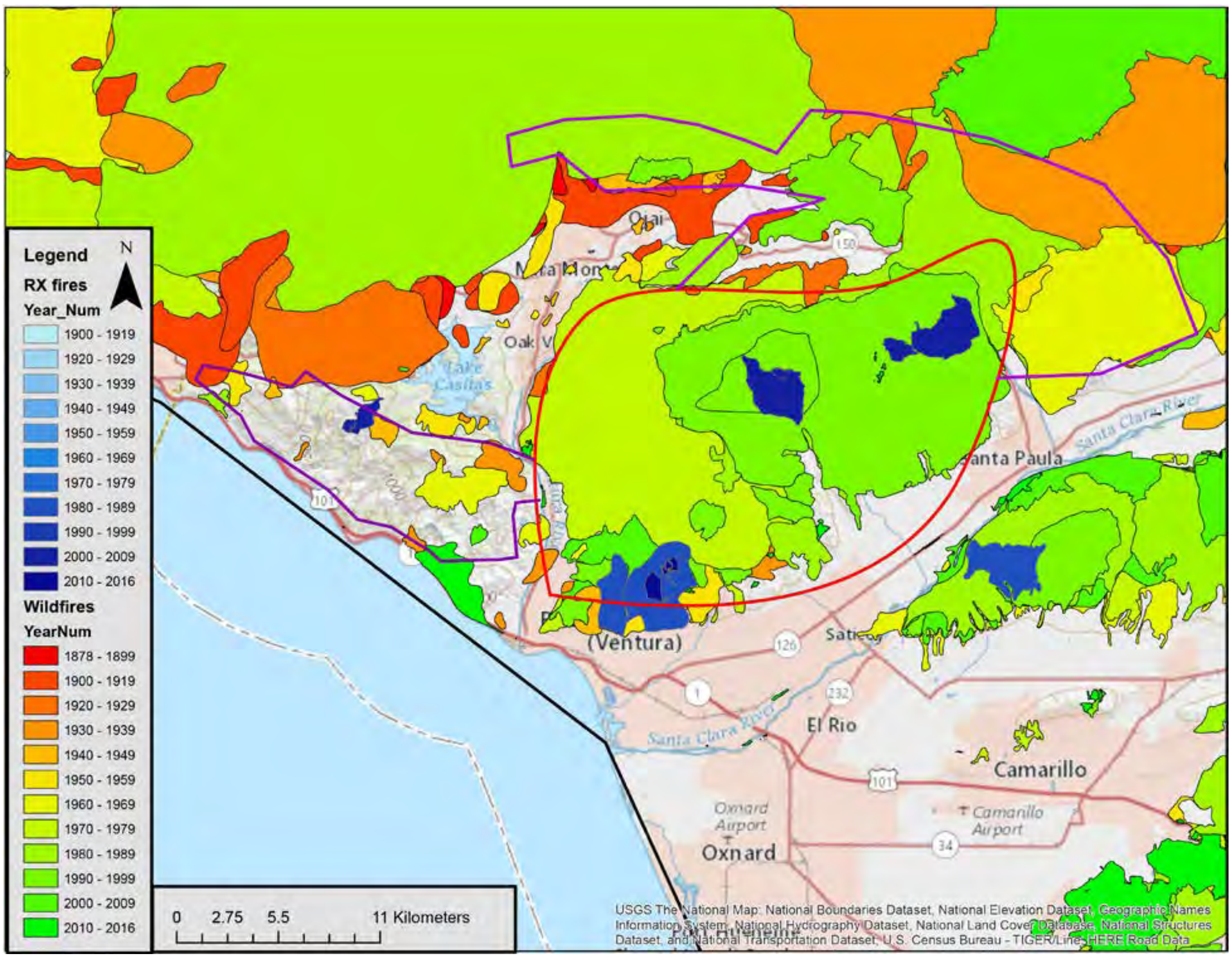


Figure 4. Prescribed Burns Within the Thomas Fire. The blue polygons show recent prescribed burns conducted by the Ventura County Fire Department. The red outline shows the rough perimeter of the 2017 Thomas Fire during its first hours. Source: USGS.

As evidenced in Fig. 4, recent prescribed burn treatments (shown in blue) were not helpful in preventing the spread of the 2017 Thomas Fire.

The easternmost prescribed burn in Fig. 4 is off Salt Marsh Road, downwind of the probable origin of the Thomas Fire. The middle burn is in Aliso Canyon. Neither of these appear to have provided anchor points for fire suppression activities.

The burns near the southern edge of the fire, in Hall, Barlow, and Sexton Canyons, have existed for many years and were intended to create opportunities for controlling a fire; however, they did little to stem fire spread.

Initially, the head fire spread 14 miles from its origin outside of Santa Paula to downtown Ventura in about five hours, with spot fires ignited by embers along the entire way. This kind of fire behavior would likely defeat any fuel break.

Further research is needed to determine all the factors involved in the Thomas Fire's spread, but the consequences are clear from the damage assessment shown in Fig. 5 below. The prescribed burns did little to protect the community. This is especially the case for the southernmost prescribed burn just above the northern edge of Ventura.

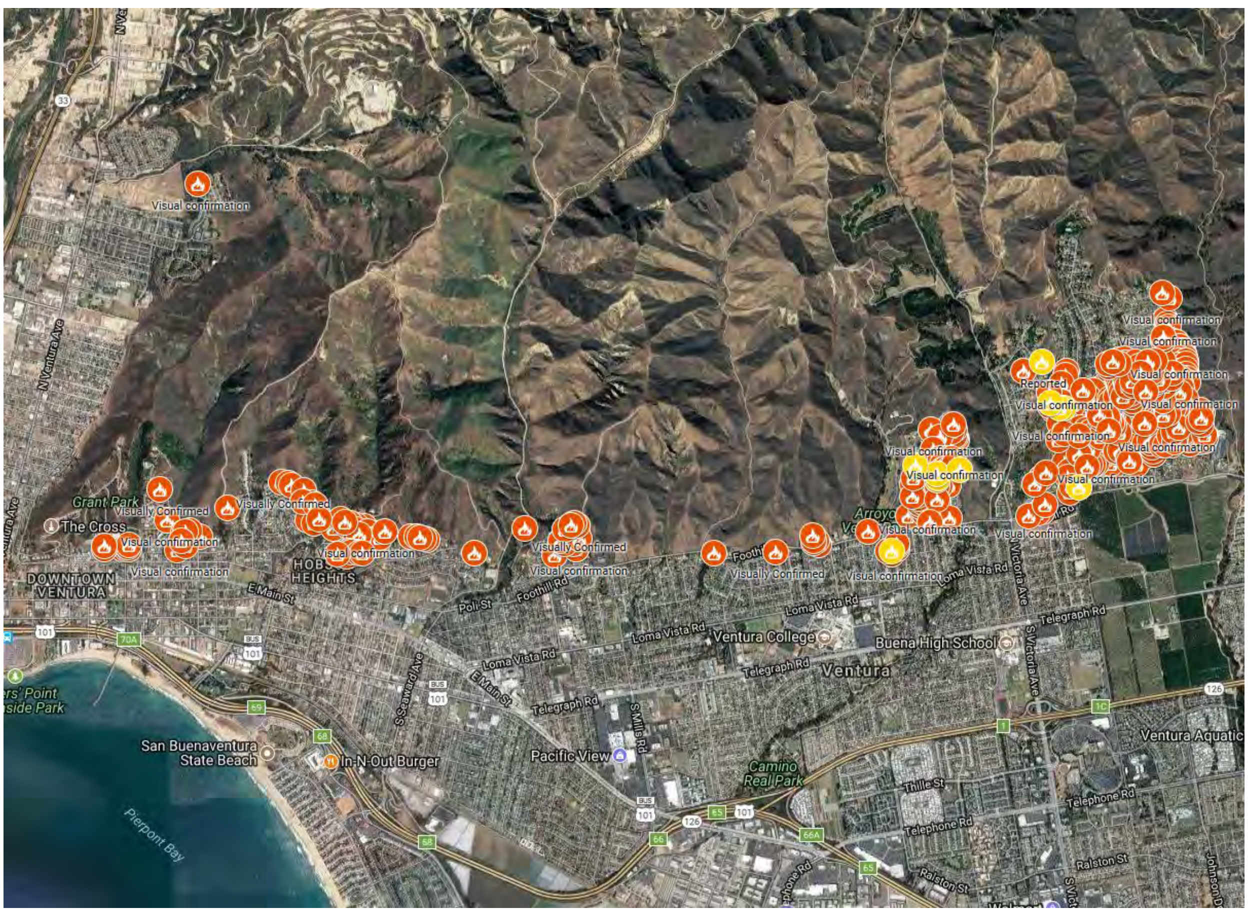
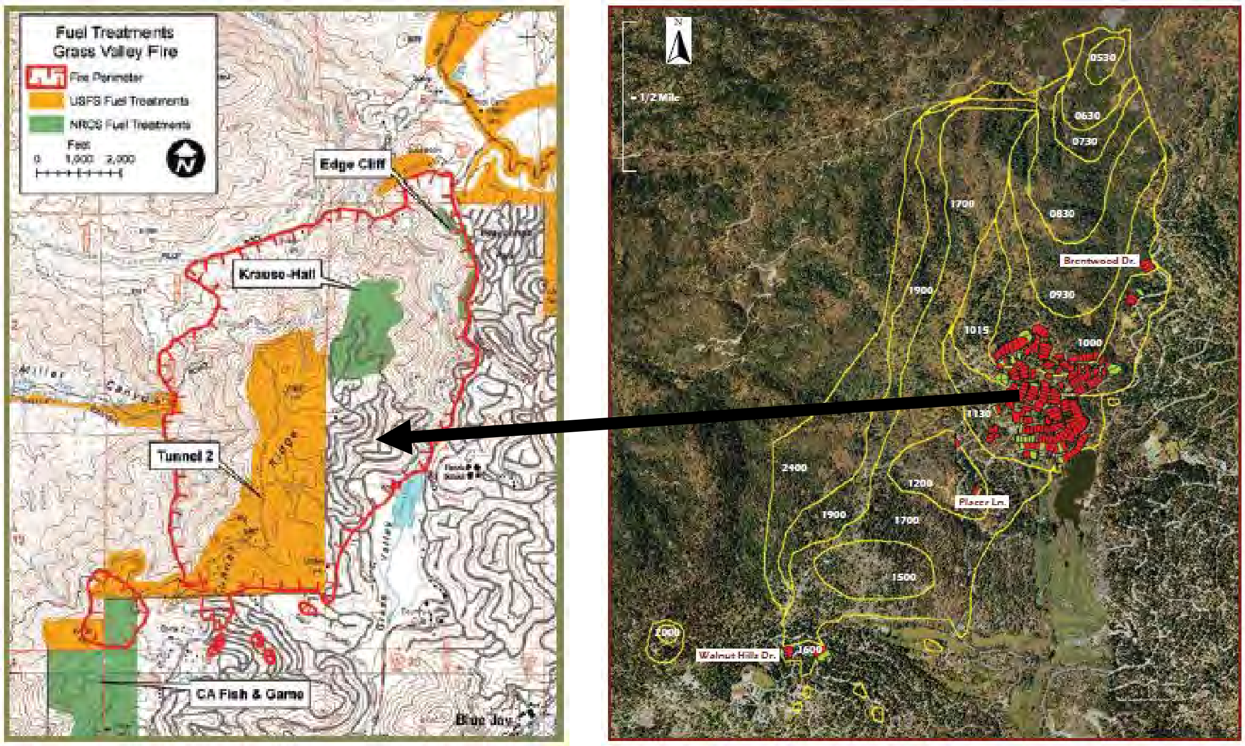


Figure 5. Home Losses from the Thomas Fire, Ventura. Burned homes are indicated by orange dots. A prescribed burn was conducted just above the burned homes in the center middle of the image. Based on visual confirmation as of 12/8/2017: https://www.google.com/maps/d/viewer?mid=10S-m7mBzbjvG1rjiJ8wFAIbeG-F5VoKS&ll=34.2989948363656%2C-119.20525410881879

In the 2007 Grass Valley Fire, the US Forest Service and the Natural Resource Conservation Service had created several fuel treatments in the forest (e.g., thinning trees, clearing understory shrubs) around the community of Lake Arrowhead (Fig. 6). Reportedly, the fuel treatments performed as expected by allowing firefighters to engage the fire directly and reducing the rate of spread and intensity (Rogers et al. 2008). However, the end result for the community was much less positive: <u>174 homes were lost</u>, the majority of structures in the hillside neighborhood of about 90 acres (Fig. 7).



Figures 6 and 7. The 2007 Grass Valley Fire, Lake Arrowhead, California. Map on the left shows forest fuel treatments as orange and green polygons (Rogers et al. 2008). Map on the right shows location of 174 homes burned in the fire (Cohen and Stratton 2008).

The comprehensive analysis of the Grass Valley Fire by US Forest Service scientists (Cohen and Stratton 2008) concluded that,

> Our post-burn examination revealed that most of the destroyed homes had green or unconsumed vegetation bordering the area of destruction. Often the area of home destruction involved more than one house. This indicates that <u>home ignitions did not result from high intensity fire spread through vegetation that engulfed homes</u>. The home ignitions primarily occurred within the HIZ (*Home Ignition Zone*) due to surface fire contacting the home, firebrands accumulating on the home, or an adjacent burning structure.

> Home ignitions due to the wildfire were primarily from firebrands igniting homes directly and producing spot fires across roads in vegetation that could subsequently spread to homes.

The 2013 Silver Fire near Banning, California (Fig. 8) challenged the fundamental assumption of that treating older vegetation is an effective way to prevent devastating wildfires. Most of the fire burned through invasive weeds and young, desert chaparral that was recovering from the deadly 2006 Esperanza Fire that killed five US Forest Service firefighters. **Twenty-six homes were lost in the 2013 fire that was fueled by seven-year-old vegetation.**

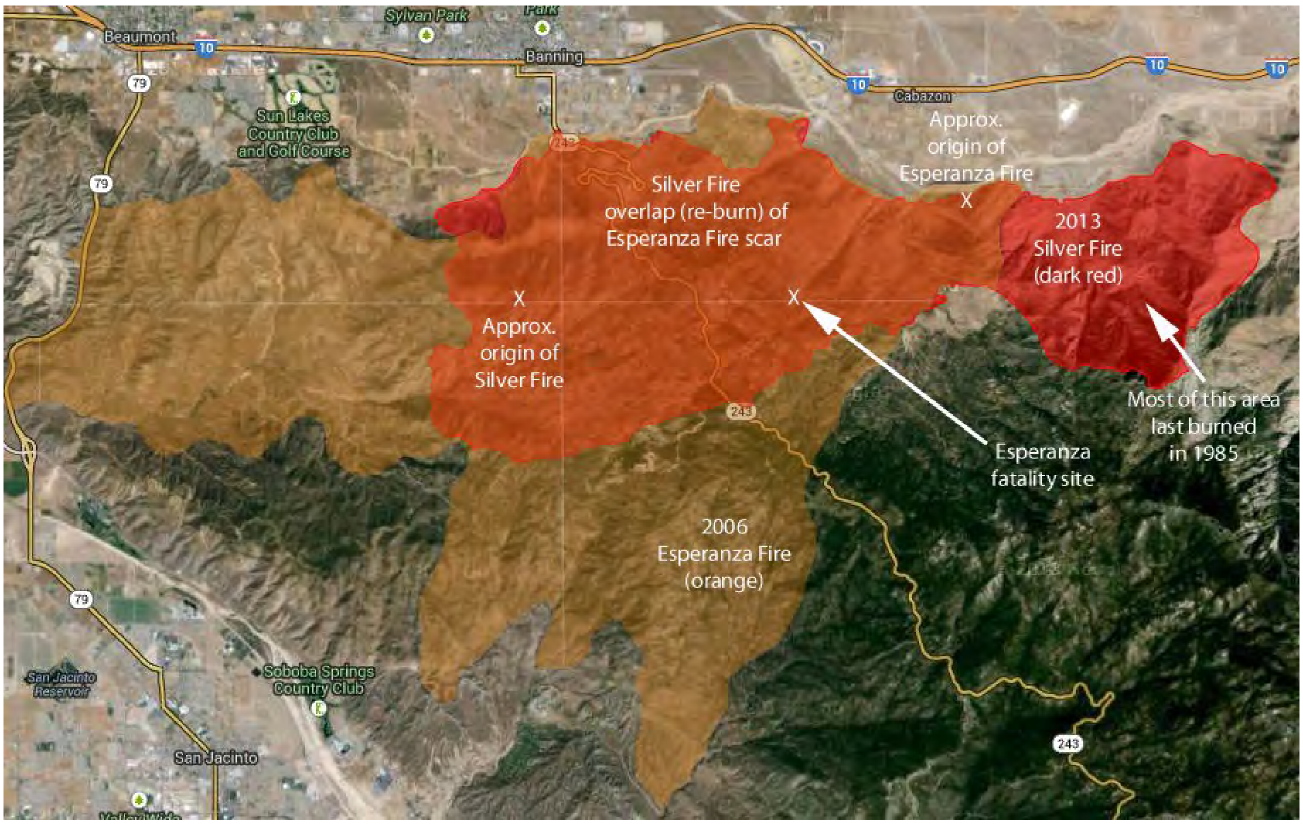


Figure 8. Reburned After Seven Years. The 2013 Silver Fire reburned almost entirely within the deadly 2006 Esperanza Fire scar near Banning, California.

The 2018 Camp Fire that devastated the town of Paradise provides another example of how younger fuels typically fail to stop fire spread or assist fire suppression efforts during wind-driven wildfires. Before reaching Paradise, the Camp Fire had to burn through more than 30,000 acres that had burned ten years before during the 2008 Butte Fire (Fig. 9). In addition, much of the area burned in 2008 had been salvaged logged, a strategy that many have incorrectly claimed is necessary to reduce fire risk. Again, the primary reason for the devastation was wind-driven embers that can travel a mile or more ahead of the fire front.

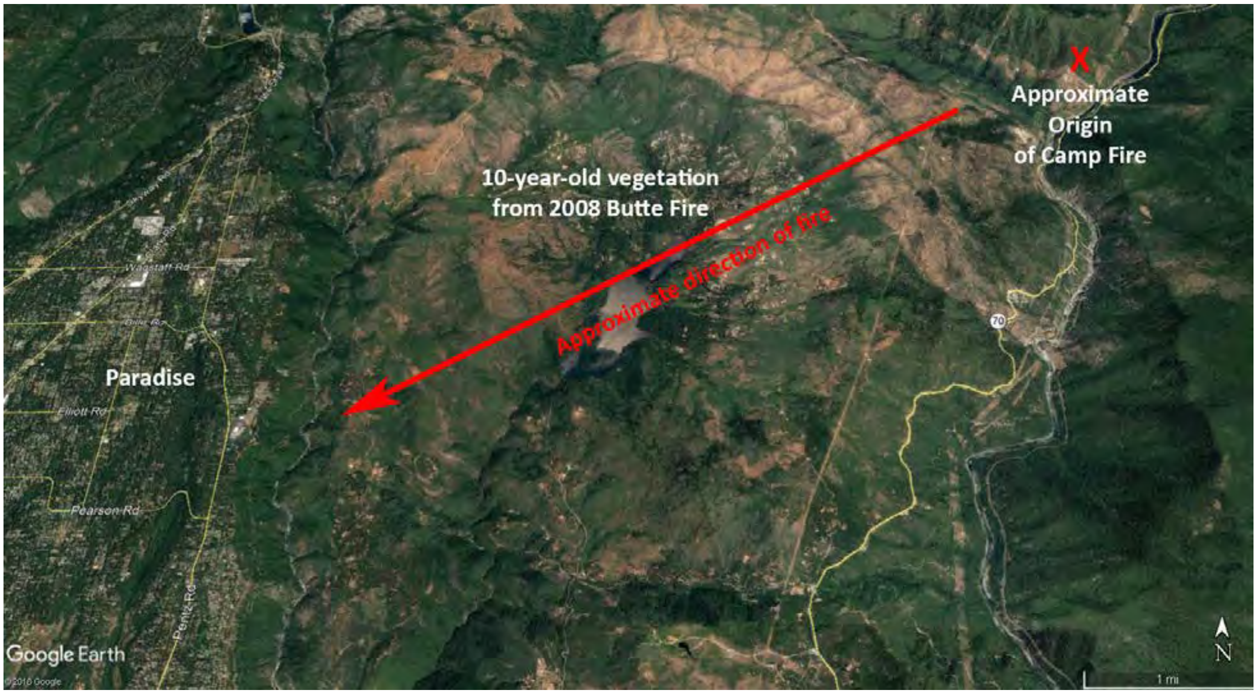


Figure 9. The wind-driven 2018 Camp Fire had to move through approximately seven miles of 10-year-old fuels plus fuel management zones before igniting Paradise with a rain of embers.

There are numerous other examples and a number of solid research papers explaining why and how homes burn. Cohen and Stratton (2008) summarized their study of multiple wildfires by writing:

> These incidents remind us to focus attention on the principal factors that contribute to a wildland-urban fire disaster—the home ignition zone.

We are not arguing whether fuel modification can be a tool that can help control non-wind-driven wildfires. Under non-extreme fire weather conditions, fuel treatments can assist fire suppression efforts. But again, these are not the fires that cause the most damage to our communities. The nearly exclusive financial and time focus on fuel modification is failing us. How else can we account for the loss of so many lives and homes in the 2017 and 2018 wildfires?

2. Exterior Sprinklers

Exterior sprinklers have been proven to play a significant role in reducing home loss during wildfires (Mitchell 2005) (Fig. 10).

Exterior sprinklers, coupled with an independent water supply (swimming pool or water tank) and an independent power source should be required for all homes within very high fire hazard zones. Clusters of homes could be served by a community water tank and should be a required retrofit for communities already built in fire-prone areas. Each house should also be required to maintain a gas-powered pump to support the sprinkler system when regional power systems fail.

Figure 10. Exterior Sprinklers. As a wildfire approaches, exterior sprinklers wet the structure at risk, the surrounding environment, and increase humidity to prevent ignition. Photo: Platypus Fire Pty Ltd.

Some California residents have retrofitted their homes with exterior sprinkler systems to protective effect. For example, under-eave misters on the Conniry/Beasley home played a critical role in allowing the structure to survive the 2003 Cedar Fire in San Diego County. The home was located in a canyon where many homes and lives were lost (Halsey 2008).

The effectiveness of exterior fire sprinklers was proven during the 2007 wind-driven Ham Lake Fire in Cook County, Minnesota. In 2001, exterior sprinklers had been installed on 188 properties, including homes and a number of resorts. **All 188 properties survived.** More than 100 neighboring properties were destroyed.

The cost of the Cook County program was covered by a FEMA hazard mitigation grant. The program was finished on time and on budget by Wildfire Protection Systems (WPS), costing $764,255. Minnesota U.S. Senator Amy Klobuchar credited the program with saving over $42 million in property value. The grant paid 75% of the cost of the sprinklers. Individual property owners covered the balance.

The sprinklers were so successful that a $3 million FEMA pre-disaster mitigation grant was awarded in 2008 to install additional wildfire sprinkler systems throughout Cook County. In 2013, another grant was awarded to install the systems in two additional counties, including properties with low-water resources. FEMA pre-disaster grants have also been used in Big Bear and Idyllwild, California to retrofit homes with non-flammable roofing and ember-resistant attic vents.

Canadians have successfully utilized exterior sprinklers too, with the implementation of portable sprinkler kits placed in the path of wildfires. The kits can tap into nearby water sources, pools, or local water tanks. These kits have protected over $2 billion in property value over the past 20 years in Canada, according to Morris Douglas, a retired advisor to various Ministries of Natural Resources.

Exterior sprinklers work by creating an environment that extinguishes embers (spotting firebrands) that are the primary cause of building ignition. The sprinklers do this by 1) **hydrating potential fuels**, thus making them less susceptible to ignition, 2) **increasing humidity**, and 3) **creating a cooler microclimate** around the home.

3. FEMA Pre-disaster Grants

Mountain communities can use federal grants to install ember-resistant vents and eliminate wood roofs, vital to reducing home loss during wildfires

In 2013, David Yegge, a fire official with the Big Bear Fire Department, submitted his fourth grant proposal to the FEMA pre-disaster mitigation grant program to pay up to 70% of the cost of re-roofing homes with fire-safe materials in the Big Bear area of San Bernardino County. Yegge also has assisted Idyllwild and Lake Tahoe in applying for grants, including the costs of installing ember-resistant attic vents.

Yegge's first $1.3 million grant in 2008 retrofitted all but 67 of 525 wooden-roofed homes needing retrofits in Big Bear Lake. A forward-thinking, "no-shake-roof" ordinance passed by the Big Bear City Council in 2008 required roofing retrofits for all homes by this year. San Bernardino County passed a similar ordinance in 2009 for all mountain communities, with compliance required by next year. Such "future effect clause" ordinances can be models for other local governments that have jurisdiction over high fire hazard areas.

To qualify for a FEMA grant, a cost/benefit analysis must be completed. "Our analysis indicated that $9.68 million would be saved in property loss for every $1 million awarded in grant funds," Yegge said. "FEMA couldn't believe the numbers until they saw the research conducted by then Cal Fire Assistant Chief Ethan Foote in the 1990s. There's a 51% reduction in risk by removing wooden roofs."

"The FEMA application process is challenging, but well worth it," said Edwina Scott, Executive Director of the Idyllwild Mountain Communities Fire Safe Council. "More than 120 Idyllwild homes are now safer because of the re-roofing program."

Additional Information

In California, the state agency that manages the grants is the Governor's Office of Emergency Services (Cal OES), Hazard Mitigation Grants Division. Cal OES is the administrative agency and decides what grant proposals are funded based on priorities established by the State Hazard Mitigation Plan.

The Mountain Area Safety Taskforce re-roofing program:
http://www.thinisin.org/shake/

The San Bernardino County re-roofing ordinance:
http://www.thinisin.org/shake/images/DOWNLOADS/ORDINANCES/ord_4059.pdf

FEMA grant program:
http://www.fema.gov/pre-disaster-mitigation-grant-program

4. The Impact of Improper Vegetation Treatments/Clearance Activities

Creating large areas of clearance with little or no vegetation creates a **"bowling alley" for embers** (Fig. 11). Without the interference of thinned, lightly irrigated vegetation, the house becomes the perfect ember catcher. To make matters worse, when a fire front hits a bare fuel break or clearance area, a shower of embers is often released (Koo et al. 2012).

After investigating why homes burn in wildfires, research scientists Syphard et al. (2012) concluded, "We're finding that geography is most important – where is the house located and where are houses placed on the landscape."

Syphard and her coauthors gathered data on 700,000 addresses in the Santa Monica Mountains and part of San Diego County. They then mapped the structures that had burned in those areas between 2001 and 2010, a time of devastating wildfires in the region.

Figure 11. Three-hundred Feet of Clearance. Such bare ground can create a potential "bowling alley" effect, directing embers directly at the structure.

Buildings on steep slopes, in Santa Ana/sundowner wind corridors, and in low-density developments intermingled with wild lands had the highest probability of burning. **Nearby vegetation was not an important factor in home destruction.**

The authors also concluded that **the exotic grasses that often sprout in areas cleared of native habitat like chaparral could be more of a fire hazard than the shrubs.** "We ironically found that homes that were surrounded mostly by grass actually ended up burning more than homes with higher fuel volumes like shrubs," Syphard said.

5. Excessive Fuel Treatments Can Destroy Native Habitats and Create More Flammable Landscapes

As shown in Fig. 12 below, a rich, old-growth stand of chaparral has been systematically compromised by clearance activities funded by a local Fire Safe chapter in the community of Painted Cave, Santa Barbara County. The foreground represents the impact of mastication, showing significant soil disturbance. In the background, the longer-term impact of earlier treatments shows the invasion and spread of highly flammable, non-native weeds and grasses. This process has increased the ignitability of this area with the addition of flashy fuels. Since the focus of wildfire risk reduction has been on the surrounding landscape, comparably little has been done to reduce the flammability of the Painted Cave community itself. In a recently proposed Community Wildfire Protection Plan for the area, the only attempt to address home ignition is the suggested production of an educational brochure.

Figure 12. The invasion of non-native weeds resulting from significant soil disturbance caused by an improper vegetation treatment project above the community of Painted Cave, Santa Barbara County.

6. Native Chaparral Shrublands Are Threatened by Too Much Fire

Chaparral is California's most extensive native plant community. However, its continued existence in many areas is threatened by the increasing number of fires. Fire frequency greater than the chaparral's natural fire return interval of 30 to 150 years or more can type convert chaparral to highly-flammable, non-native grasslands (Fig. 13). Such grasslands played a significant role in spreading the 2017 Tubbs, Nuns, Atlas, and Thomas fires.

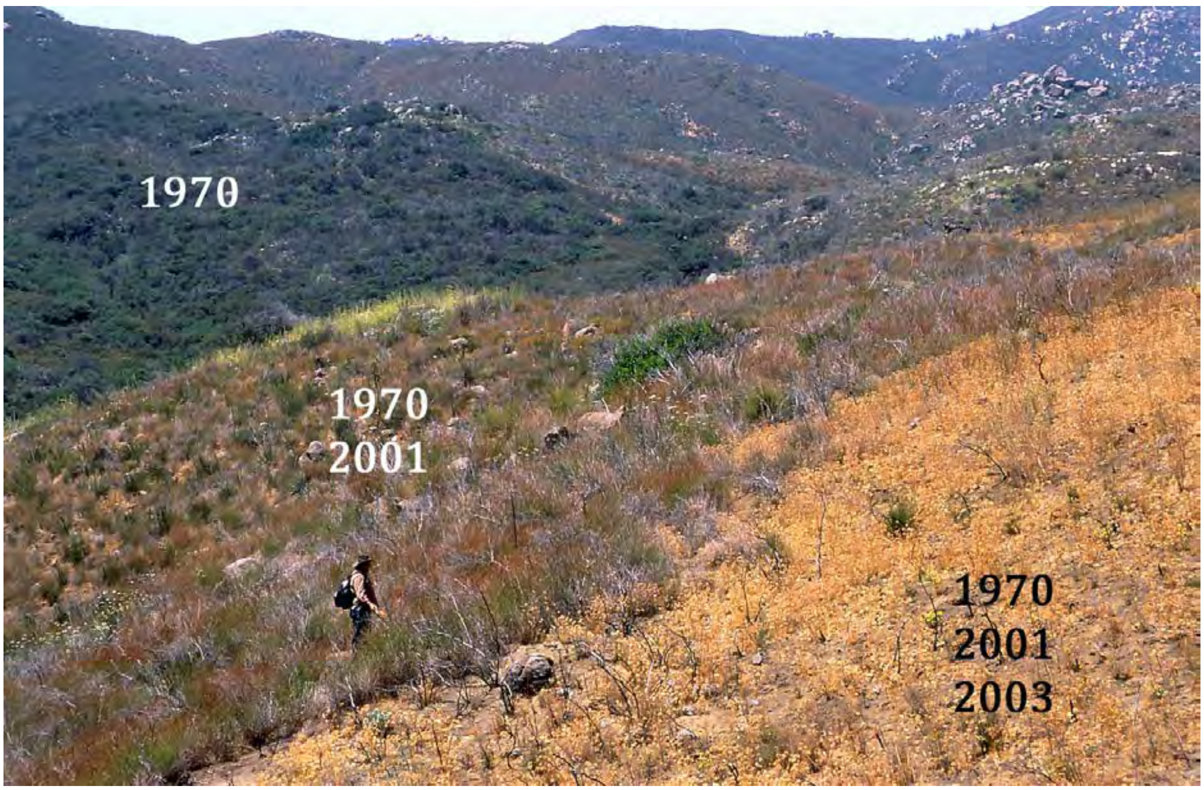


Figure 13. The Impact of Excessive Fire on Chaparral. This area has been subjected to three wildfires. The first, the 1970 Laguna Fire, burned the entire area shown in the photograph. The far left shows mature chaparral that has grown since 1970. The middle area is recovering after being burned again in the 2001 Viejas Fire. It is composed primarily of native shrubs such as chamise, deerweed, and several other species. To the right is a portion that was burned a third time during the 2003 Cedar Fire. The interval between the 2001 and 2003 fires was too short for the chaparral to properly recover. Consequently, the majority of the resprouting shrubs were killed and the area was overwhelmed by non-native grasses. Since this photo was taken (2004), the area has been restudied in 2018. It remains compromised by non-native grasses, with significant areas of bare ground and lower biodiversity compared to the adjacent area burned in 2001. Location: east of Alpine off Interstate 8, San Diego County. From Halsey and Syphard (2015).

The threat of excessive fire to native shrublands is statewide but is especially extreme in the southern portion (Fig. 14). As shown in the map below, most of the plant communities within the four national forests of southern California are threatened by too much fire (shown in red to yellow colors).

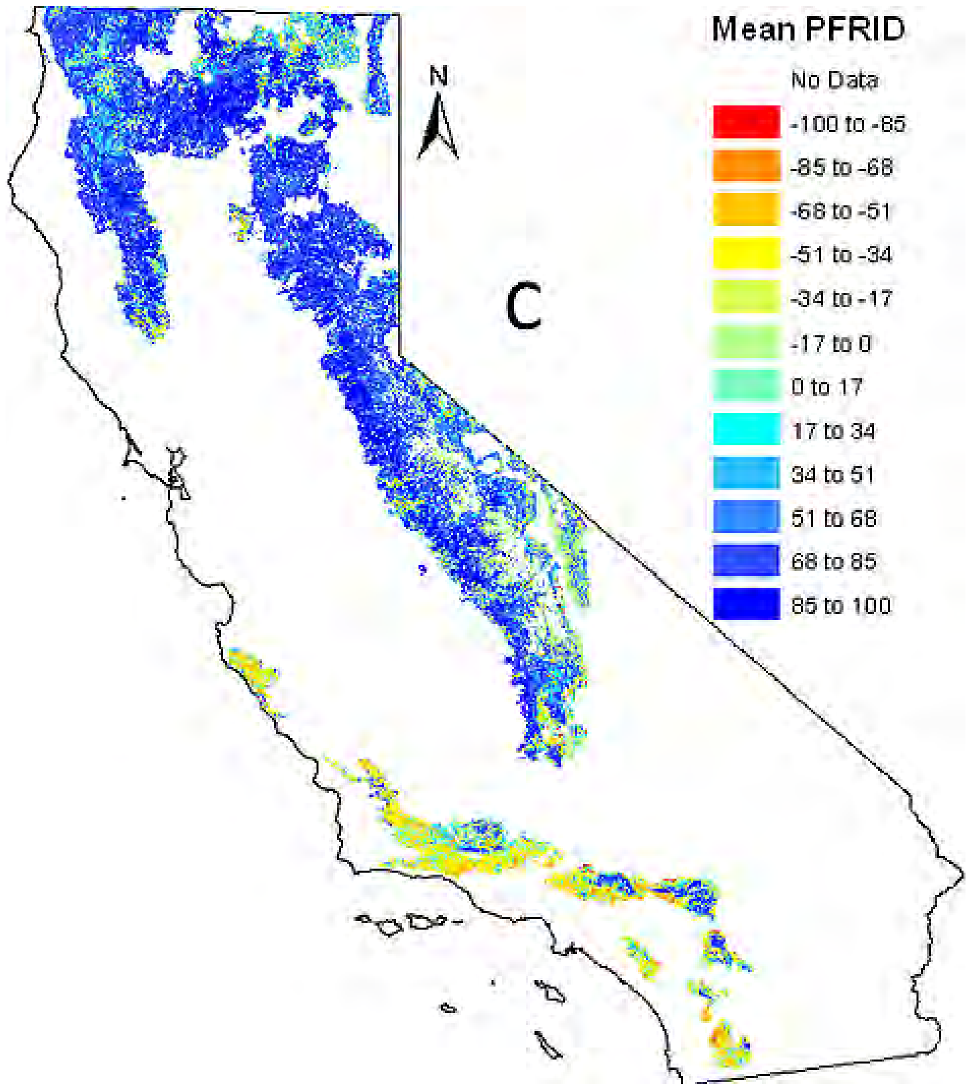


Figure 14. A Tale of Two Californias. Most chaparral in California is threatened by too much fire as shown by the map's color variations representing the Fire Return Interval Departure percentages (PFRID) for national forest lands in California. Note the color differences between the southern California national forests which are dominated by chaparral (yellows), and the conifer dominated forests in the Sierra Nevada (blues). The warm colors identify areas where the current fire return interval is shorter than pre-European settlement (negative PFRID), threatening native plant communities. Cool colors represent current fire return intervals that are longer than pre-European settlement (positive PFRID), indicating a fire deficit in higher elevation forests. From Safford and Van de Water (2014).

As climate change continues to impact California, it is predicted that the loss of chaparral will accelerate in the southern and central parts of the state. The ecosystem will also begin to lose ground further north (Fig. 15). Some regions may become more suitable for chaparral, but considering the speed at which the climate is changing, it is difficult to predict what vegetation communities will ultimately develop in those areas. Such changes need to be considered when developing fire and development plans. Unfortunately, the current draft of the California Board of Forestry's (and Cal Fire's) Vegetation Treatment Program fails to properly account for these predicted changes and calls for "treatment" of chaparral in northern California for "ecological purposes." Rather than "treating" chaparral, the Board of Forestry should develop strategies to protect its further loss.

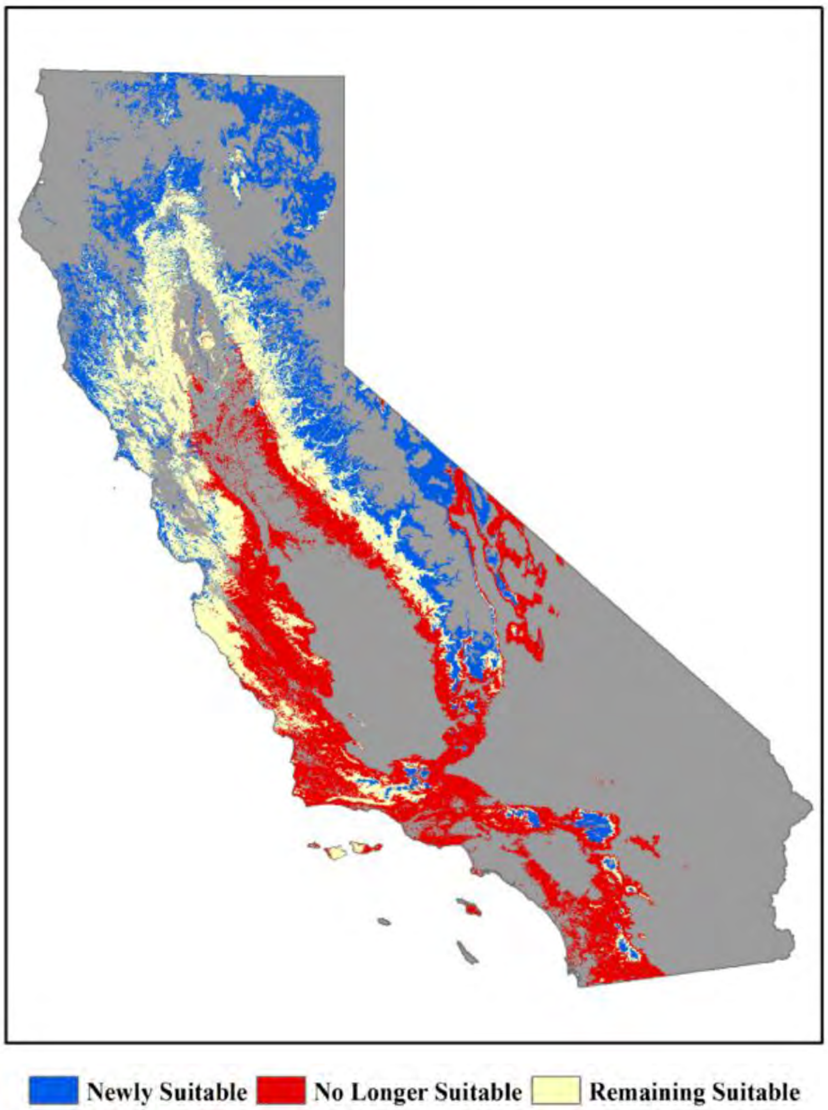


Figure 15. Potential Loss of Chaparral. Predicted end-of-century chaparral distribution change under a continued high carbon emissions and hot/dry climate change scenario. From Thorne et al. (2016).

The US Forest Service has recognized the natural resource value of chaparral (Fig. 16) and the important ecological services it provides us as well as the threat fire now poses to the system in their new Region 5 Ecological Restoration Leadership Intent (USFS 2015). The document can serve as a model for how California views chaparral as well, the state's most characteristic and extensive ecosystem.

Figure 16. Mixed chaparral in the Santa Monica Mountains. The natural fire return interval for chaparral is 30 to 150 years or more. Increasing fire frequencies either through prescribed burning or accidental wildfire leads to the eventual elimination of chaparral, California's most extensive ecosystem.

8. Common Misconceptions about Forests and Fire in California

Do "Thinning" Logging Operations Stop or Slow Wildland Fires? No. "Thinning" is just a euphemism for intensive commercial logging, which kills and removes most of the trees in a stand, including many mature and old-growth trees. With fewer trees, winds, and fire, can spread faster through the forest. In fact, extensive research shows that commercial logging, conducted under the guise of "thinning", not only makes wildland fires spread *faster*, but in most cases also *increases* fire intensity, in terms of the percentage of trees killed (Cruz et al. 2008, 2014).

Does Reducing Environmental Protections, and Increasing Logging, Curb Forest Fires? No, based on the largest analysis ever conducted, this approach increases fire intensity (Bradley et al. 2016). Logging reduces the cooling shade of the forest canopy, creating hotter and drier conditions, leaves behind kindling-like “slash” debris, and spreads combustible invasive weeds like cheatgrass.

Do “Thinning” Logging Operations Improve Forest Carbon Storage? No. In fact, this type of logging results in a large overall net *reduction* in forest carbon storage, and an *increase* in carbon emissions, relative to wildland fire alone (no logging), while protecting forests from logging maximizes carbon storage and removes more CO_2 from the atmosphere (Campbell et al. 2012, Law et al. 2018). To mitigate climate change, we must protect our forests.

Do Large High-Intensity Fire Patches Destroy Wildlife Habitat or Prevent Forest Regeneration? No. Hundreds of peer-reviewed scientific studies find that patches of high-intensity fire create “snag forest habitat”, which is comparable to old-growth forest in terms of native biodiversity and wildlife abundance (Fig. 17) (summarized in DellaSala and Hanson 2015). In fact, more plant, animal, and insect species in the forest are associated with this habitat type than any other (Swanson et al. 2014). Forests naturally regenerate in heterogeneous, ecologically beneficial ways in large high-intensity fire patches (DellaSala and Hanson 2015, Hanson 2018).

Figure 17. Trees killed in high-severity fire patches provide extremely important habitat for a wide array of plants and animals. Photo: Sierra Nevada post fire forest habitat by Chad Hanson.

Do Forests with More Dead Trees Burn More Intensely? Small-scale studies are mixed within 1-2 years after trees die, i.e., the “red phase” (Bond et al. 2009, Stephens et al. 2018), but the largest analysis, spanning the entire western U.S., found no effect (Hart et al. 2015). Later, after needles and twigs fall and quickly decay into soil, and after many snags have fallen, such areas have similar or *lower* fire intensity (Hart et al. 2015, Meigs et al. 2016).

Are Our Forests Unnaturally Dense and "Overstocked", and Do Denser Forests Necessarily Burn More Intensely? No. We currently have slightly more small trees than we had historically in California, but have fewer medium/large trees, and less overall biomass. Our forests are actually less dense, due to decades of logging (McIntyre et al. 2015). Historical forests were variable in density, with both open and very dense forests (Baker et al. 2018). Wildland fire is driven mostly by weather, while forest density is a "poor predictor" (Zald and Dunn 2018).

Do We Currently Have an Unnatural Excess of Fire in our Forests? No. The is a broad consensus among fire ecologists that we currently have far less fire in western US forests than we did historically, prior to fire suppression (Hanson et al. 2015). For example, currently, we have about 200,000 acres of fire in California's forests per year on average, and 500,000 to 900,000 in the very biggest years. Historically, before fire suppression, an average year would see 1-2 million acres in California's forests (Stephens et al. 2007, Baker 2017). We also have less high-intensity fire now (Stephens et al. 2007, Mallek et al. 2013, Baker et al. 2018).

Did the Rim Fire Emit Carbon Equal to Over 2 Million Cars? No. This is based on the false assumption that fire-killed trees are largely vaporized, and that no post-fire regrowth occurs to pull CO_2 out of the atmosphere. Field studies of large fires find only about 11% of forest carbon is consumed, and only 3% of the carbon in trees (Campbell et al. 2007), and vigorous post-fire regrowth returns forests to carbon sinks within several years (Meigs et al. 2009).

Are Recent Large Fires Unprecedented? No. Fires similar in size to the Rim fire and Rough fire, or larger, occurred in the 1800s, such as in 1829, 1864, and 1889 (Bekker and Taylor 2010, Caprio 2016). Forest fires hundreds of thousands of acres in size are not unprecedented

Do Occasional Cycles of Drought and Native Bark Beetles Make Forests "Unhealthy"? Actually, it's the opposite. During droughts, native bark beetles selectively kill the weakest and least climate-adapted trees, leaving the stronger and more climate-resilient trees to survive and reproduce (Six et al. 2018). In areas with many new snags from drought and native bark beetles, most bird and small mammal species *increase* in numbers in such areas, because snags provide such excellent wildlife habitat (Stone 1995).

Is Climate Change a Factor in Recent Large Fires? Yes. Human-caused climate change increases temperatures, which influences wildland fire. Some mistakenly assume this means we must have too much fire but, due to fire suppression, we still have a substantial fire deficit in our forests. For example, historically, snag forest habitat, from high-intensity fire and patches of snag recruitment due to drought and native bark beetles, comprised 14% to 30% of the forests in the Sierra Nevada (Show and Kotok 1925, Safford 2013, Baker 2014, Baker et al. 2018). Currently, based on federal Forest Inventory and Analysis data, it comprises less than 8% of Sierra Nevada forests.

Do Current Fires Burn Mostly at High-Intensity Due to Fire Suppression? Current fire is mostly low/moderate-intensity in western US forests, including the largest fires (Mallek et al. 2013, Baker et al. 2018). The most long-unburned forests experience mostly low/moderate-intensity fire (Odion and Hanson 2008, Miller et al. 2012, van Wagtendonk et al. 2012). Older forests self-thin their understories (Zachmann et al. 2018).

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Appendix C

Cited Literature from Recommendations

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"Of utmost importance will be for land management agencies, county planning departments, and firefighting agencies to recognize that the present distribution of chaparral does not necessarily reflect its future. As climate change continues and the population increases, fire patterns will change and natural habitats that may be taken for granted today will be changed or eliminated tomorrow.

The chaparral, and the remarkable biodiversity it supports, contributes to making California one of the richest temperate regions on Earth. As a consequence, it is essential that both local and regional land management plans emphasize the preservation of chaparral, especially old-growth chaparral (over 75 years old), by protecting large, contiguous stands from fragmentation, development, unnecessary clearance operations, and increased fire frequencies."

Koo, E, R.R. Linn, P.J. Pagni, and C.B. Edminster. 2012. Modeling firebrand transport in wildfires using HIGRAD/FIRETC. International Journal of Wildland Fire 21: 396-417.

"Heterogeneity of fuel and the structure of mixed fuel types could play an important role in determining the entrainment, updraft and flame and plume structures and there-fore the firebrand transport. Simulations of HIGRAD/FIRETEC with fuel breaks (Pimontet al.2009) demonstrated that the entrainment flow from the fuel break side was enhanced when the fireline hit the fuel break owing to a decrease in drag. The enhanced entrainment can loft more firebrands, which coincides with the field experiments and observations: a fire that reaches a fuel break often releases a shower of firebrands (Gould et al.2009)." *

* Gould J.S., McCaw W.L., Cheney N.P., Ellis P.F., Knight I.K., Sullivan A.L. 2009. Project Vesta – Fire Behaviour in Dry Eucalypt Forest: Fuel Structure, Fuel Dynamics and Fire Behaviour. Ensis–CSIRO: Canberra ACT; and Department of Environment and Conservation: Perth, WA.

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"In some shrubland-dominated landscapes, the arrangement and location of homes have been the most important factors for explaining structure loss: landscape factors such as low housing density, isolated clusters of residential development and long distances to major roads are better predictors of house loss than local factors such as defensible space, fuel or terrain94,98. Whether these findings apply to fire-prone landscapes in general or whether there are variations between development patterns and fire regimes needs further research. Although isolated clusters of development and low housing density mean that homes are embedded within, and more exposed to, a matrix of wildland vegetation19, ignition-prone homes that are closely spaced in neighbourhoods can also facilitate the spread of house-to-house fire, especially during extreme fire weather."

Syphard, A.D. and J.E. Keeley. 2015. Location, timing and extent of wildfire vary by cause of ignition. Journal of Wildland Fire 24 (1): 37-47.

"Overall, vegetation type was more important in the Santa Monica Mountains than in San Diego County, with grass being the most common vegetation type for all ignition causes. In San Diego, ignitions occurred most frequently in grass or forest vegetation types."

Zald, H.S.J. and C.J. Dunn. 2018. Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape. Ecological Applications 28 (4); 1068-1080.

"However, in the landscape we studied, intensive plantation forestry appears to have a greater impact on fire severity than decades of fire exclusion. Second, higher fire severity in plantations potentially flips the perceived risk and hazard in multi-owner landscapes, because higher severity fire on intensively managed private lands implies they are the greater source of risk than older forests on federal lands. These older forests likely now experience higher fire severity than historically due to decades of fire exclusion, yet in comparison to intensively managed plantations, the effects of decades of fire exclusion in older forests appear to be less important than increased severity in young intensively managed plantations on private industrial lands."

CAL-IPC
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March 1, 2019

Edith Hannigan, Land Use Planning Program Manager
California Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

Dear Ms. Hannigan,

I am writing on behalf of Cal-IPC to provide comment on Notice of Preparation for a Programmatic Environmental Impact Report (PEIR) for Calfire's Vegetation Treatment Program (VTP). Our interest in the VTP and PEIR stems from our work to protect California's wildlands from invasive plants and the connections between wildfire and invasive plants. We support thorough integration of invasive plant prevention and management principles and priorities into the PEIR. We have a few aspects of the upcoming PEIR and associate control work that we would like to comment on.

Comprehensive approach to addressing wildfire risk
Fuel modifications are important, but they also present a risk of weed spread. The VTP should go beyond vegetation treatment and incorporate other aspects such as ignition reduction strategies and fire-safe landscaping practices. It is also important to recognize regional differences. While wildfires in northern California and forests of southern California's mountain ranges may be in part a consequence of long-term fire suppression patterns, in many part of southern California wildfires are often a result of wildfire-driven type conversion of shrubland ecosystems to annual grasslands dominated by highly flammable annual invasive species.

BMPs to reduce spread of invasive plants
Vegetation treatment and firefighting can facilitate the spread of invasive plants. Weed seed transfer comes from equipment that is not cleaned properly between sites and ground disturbance opens up safe sites for invasive plants to establish. We encourage the formal adoption of BMPs to reduce weed spread (see Cal-IPC's *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers*). We encourage the PEIR to comprehensively assess the disturbance from fuel breaks and fuel modification zones and work towards focusing them in areas that are already disturbed (such as roadsides and at community edges), that directly help to protect communities, and that minimize disturbance-facilitated weed spread.

Post-fire recovery
Strategic invasive plant management during post-fire recovery is critical. This requires timely funding to address weeds in the first growing season and several subsequent growing seasons. The VTP should have a structure in place to meet this need, and the PEIR should evaluate the potential impact of delayed or deficient post-fire weed management activities.

Landscape-level approach
We encourage the recognition that controlling invasive plant spread is a landscape-level challenge that calls for landscape-level solutions. To this end, it is important that the VTP works with established collaborative groups to set strategy for regional invasive plant management. Strategies include containment of widespread invasive plants, eradication of isolated populations of incipient invasions, and surveillance to support early detection and rapid response. County-based Weed Management Areas (WMAs) bring together public and private stakeholders and land managers to coordinate strategy. Cal-IPC and CDFA work with WMAs at the regional level to set priorities and coordinate action. We recommend that the PEIR explicitly mention such collaborative efforts and the importance of working together with those managing other lands. This includes federal landowners such as the USDA Forest Service and National Park Service as well as private landowners.

Invasive plants are in all regions
Each region of California has significant invasive plant challenges to be addressed. We suggest that invasive plant management approaches be applied across the board in the design of the VTP.

Other plans
We recommend that the PEIR reflect the priorities of other relevant state plans, including: the state's strategic framework on invasive species; (www.iscc.ca.gov); the California State Wildlife Action Plan; and the state's new Biodiversity Initiative.

Thank you for the opportunity to provide public comment to your plan. Please feel free to contact me with any additional questions.

Sincerely,

Doug Johnson
Executive Director
dwjohnson@cal-ipc.org

CALIFORNIA NATIVE PLANT SOCIETY

March 1, 2019

Ms. Edith Hannigan, Land Use Planning Program Manager
California Board of Forestry and Fire Protection
PO Box 944246
Sacramento CA 94244

Sent via electronic mail to: CalVTP@bof.ca.gov

RE: Notice of Preparation of a Program Environmental Impact Report for the California Vegetation Treatment Program

Dear Ms. Hannigan,
The California Native Plant Society (CNPS) appreciates the opportunity to provide comments and recommendations in response to the California Board of Forestry's (the Board, or BoF) Notice of Preparation (NoP) of an Environmental Impact Report (EIR, or VTPEIR) for the California Vegetation Treatment Program (CalVTP, or VTP).

The California Native Plant Society ("CNPS") is a non-profit environmental organization with over 10,000 members in 35 Chapters across California and Baja California, Mexico. CNPS' mission is to protect California's native plant heritage and preserve it for future generations through application of science, research, education, and conservation. CNPS works closely with decision-makers, scientists, and local planners to advocate for well-informed policies, regulations, and land management practices.

Since at least the 1990's, CNPS has been involved in the development of the current Vegetation Management Program (VMP), and has participated in project-level review and analysis of proposed VMP treatment projects across the state. We have also contributed comments and recommendations to the BoF during previous drafts of a VTP and VTPEIR. We provide past comments from CNPS to the BoF regarding the VTP and VTPEIR as an attachment to this letter in order to establish within the administrative record our history of participation and recommendations regarding the VTP and VTPEIR process.

The NOP outlines how the VTP intends to implement vegetation treatments to prevent the catastrophic loss of life, homes, and communities from wildfire, and that these treatments will be analyzed for their impacts to the environment. Yet the NOP does not make reference to reducing the flammability of homes - particularly from ember ignitions, reducing unintended human ignitions, nor altering development patterns to avoid building in high fire-risk areas. Each of these actions are reasonable and foreseeable and when implemented, could influence the character of site-specific, later vegetation treatment projects. We recommend these measures be incorporated into the VTP, at least as a discussion describing elements of the purpose and need for treatments, and/or incorporated into an alternative analyzed within the VTPEIR. California's catastrophic wildfires and associated loss of life and property are as much a people problem (building codes, ignition sources, bad planning) as they are a vegetation problem, and the NOP, the VTPEIR, and the VTP must acknowledge that. We present our scoping comments below.

1. **Clarify the purpose and need of the new VTP to avoid conflating two important but different goals; preventing homes and communities from burning, and returning forests to more natural conditions. Clearer goals will foster better policy development and implementation around fire, fuels, and vegetation management.**
As with previous iterations of the VTP, the current NOP language continues framing the scope of the VTP in terms of thinning forest and shrubland vegetation across 20.3 million acres of treatable landscape to prevent homes from burning. While treating vegetation to establish and maintain defensible space, and to create strategic deployment opportunities for fire-fighters can help prevent homes from burning, thinking that we will save towns by thinning forests and clearing chaparral ignores the conditions that have led to California's most catastrophic wildfires - extreme winds carrying embers—in some places over a mile—into vulnerable communities.

Appropriate vegetation treatments can establish defensible space around homes, infrastructure, and communities in forest and chaparral landscapes. As a separate process, appropriate vegetation treatments in some forested landscapes (e.g. thinning of small trees and of some understory ladder fuel vegetation) can help restore more natural forest structure and function. These are not the same and should not be conflated. Vegetation treatments beyond defensible space in chaparral and coastal sage scrub, e.g. 30' to 50' wide fuel breaks, can provide safer deployment opportunities for fire crews. Fire breaks provide no restorative or ecological benefit as can occur with forests, and must be considered a natural resource sacrifice for the sake of strategic fire-fighting, and be mitigated for commensurate with project impacts. For Southern California shrubland systems, a recent study concludes that vegetation treatment is a low priority action for fire safety, compared with the higher priorities of ignition prevention, wildfire suppression, land use and zoning, and home protection.[1]

The VTPEIR must present maps of previous vegetation treatments, and data demonstrating the effect of the treatments on the goals it was expected to achieve. Treatment history data is available for the areas in and around the Thomas and Camp fires. These data must be presented in the VTPEIR to demonstrate how vegetation treatments of various ages affected the behavior of wildfires.
An effective VTP must be clear where and why vegetation treatments would occur in, around, and distant from communities. The NOP is not clear because it conflates treatment goals.

2. Redefine treatment types and clarify their goals.
The NOP defines three treatment types; Wildland Urban Interface (WUI) fuel reduction, fuel breaks, and ecological restoration projects. We recommend redefining these treatment types based on whether they occur in predominantly forest or chaparral/coastal sage scrub (CSS) landscapes, on their proximity to life and property, and clarify the intended treatment outcomes for each type. Doing so will provide more clarity regarding the location and rationale of potential treatment activities, and facilitate analysis of their potential impacts in the VTPEIR.

[1] Evers, C. R., Ager, A. A., Nielsen-Pincus, M., Palaiologou, P., & Bunzel, K. (2019). Archetypes of community wildfire exposure from national forests of the western US. Landscape and Urban Planning, 182, 55-66.

For example, we recommend identifying at least three treatment types, including: Built landscape / community treatments, where projects establish or maintain defensible space; Matrix landscape treatments, where infrastructure and homes occur at lower density than build landscape / community areas and where projects can provide strategic fire crew deployment options in chaparral and improve forest structure and function; Roadless areas including wilderness, where prescribed fire (and managed fire – though not a treatment activity in the VTP) can benefit forested wilderness / roadless areas.

Mixed Conifer Forest-related treatment types
• Built landscape / community treatments: all treatment activities listed in NOP
• Matrix landscape treatments: all treatment activities listed in NOP
• Roadless areas / wilderness treatments: limited prescribed fire treatment only

Chaparral / CSS-related treatment types
• Built landscape / community treatments: projects that establish / maintain defensible space: all treatments *except* prescribed fire
• Matrix landscape treatments: mechanical / manual treatments limited to strategic fire breaks. No prescribed fire.
• Roadless areas / wilderness treatments: NA. No treatments needed or permitted in this category.

These three treatment types could be used to categorize treatments in other broad vegetation types across the state (e.g., grasslands, desert, oak woodlands, etc.).

3. Cleary define how project level analysis and review will occur effectively.
The VTPEIR must define how project level analysis and review will be achieved, and how the public will be able to participate in the process.

Botanical surveys are a fundamental part of describing the environmental setting for the project. The California Natural Diversity Database is known to be incomplete, and therefore cannot be relied upon to determine either the presence or the absence of any sensitive plant species. Current surveys of project sites are always necessary to determine what occurs there.

The California Department of Fish and Wildlife’s Vegetation and Classification Mapping Program (VegCAMP) classifies and maps plant communities across the state using the National Vegetation Classification System (NVCS). The NVCS is the national standard and has replaced previous classification systems (e.g., Holland types, CWHR) as California’s standard system. Many plant communities are ranked as rare natural communities because of limited distribution and threats. The VTPEIR must employ the most up to date vegetation maps and fire ecology of vegetation types in its selection of treatments, analysis of potential impacts to rare natural communities, and to track cumulative effects to plant communities as a result of VTP implementation.

Valid botanical surveys must be conducted, as specified under California Department of Fish and Wildlife protocols, and current state standard vegetation maps must be employed in order to analyze the kinds of impacts that may occur, and what types of avoidance, minimization, or mitigation of impacts might be necessary.

4. Describe how the VTP will monitor and report cumulative effects, incorporate future conditions, and adapt based on findings.

The VTP must define how cumulative effects of projects implemented under the VTPEIR will be monitored and reported, how future conditions including climate change will be incorporated into project treatment assessment and analysis, and how the VTP will be adapted based on findings of these analyses. The identification and analysis of cumulative effects must include measures to prevent or mitigate VTP-related disturbance to sensitive environmental resources, (i.e. avoiding damage to the resources, preventing and treating any spread of California Department of Food and Agriculture-listed noxious weeds, etc.)

We appreciate the opportunity to review the NOP and provide these comments.
Sincerely,

Greg Suba

Greg Suba
Conservation Program Director

Protecting California's native flora since 1965

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CNPS Comments to

California Board of Forestry

regarding

Vegetation Treatment Program

2013 - 2018

January 12, 2018

Edith Hannigan, Board Analyst
Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

Re: Vegetation Treatment Program Recirculated Revised Draft Program Environmental Impact Report

Sent via electronic mail to: VegetationTreatment@bof.ca.gov

Dear Ms. Hannigan:
The California Native Plant Society provides the following comments regarding the Vegetation Treatment Program ("VTP" or "Program") and its associated Recirculated Revised Draft Program Environmental Impact Report ("DEIR").

The California Native Plant Society ("CNPS") is a non-profit environmental organization with 10,000 members in 35 Chapters across California and Baja California, Mexico. CNPS' mission is to protect California's native plant heritage and preserve it for future generations through application of science, research, education, and conservation. CNPS works closely with decision-makers, scientists, and local planners to advocate for well-informed policies, regulations, and land management practices.

Several CNPS Chapters have submitted letters detailing the failings of the latest version of the VTP and associated DEIR, along with recommendations for making necessary changes to both.

We fully support and incorporate the comments submitted by CNPS San Diego, Dorothy King Young, Los Angeles – Santa Monica Mountains, and Marin Chapters herein by reference.[1] These comment letters have been prepared and submitted by Californians knowledgeable in the local flora of their region, who are committed to engaging in the public review and discourse needed to ensuring a proposed VTP is ultimately a Program that can achieve the goals of protecting life, property, and natural resources.

We also support and incorporate the comments submitted by the Endangered Habitats League, the California Chaparral Institute, and several fire scientists and fire ecologists herein by reference.[2]

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[1] The following letters are attached and incorporated by reference into this letter: Letter from Frank Landis, Conservation Chair, CNPS San Diego Chapter to Edith Hannigan, Board Analyst, January 9, 2018; letter from Renée Pasquinelli, Conservation Co-Chair, CNPS Dorothy King Young Chapter to California Board of Forestry and Fire Protection, January 9, 2018; letter from Snowdy Dodson, President, CNPS Los Angeles – Santa Monica Mountains Chapter to Edith Hannigan, Board Analyst, January 8, 2018; letter from David C. Long, CNPS Marin Chapter to Edith Hannigan, Board Analyst, January 11, 2018.

[2] The following letters are incorporated herein by reference: letter from Schute, Mihaly & Weinberger LLP, Laurel L. Impett to Edith Hannigan, Board Analyst, January 11, 2018; letter from Richard W. Halsey, Director,

Because most of our concerns with the latest iteration of the VTP PEIR are the same as those detailed in previous comment letters from our organization, we also incorporate our past comments herein by reference.[3]

California is a land covered by a kaleidoscope of vegetation, and it is essential we preserve the basic elements of that heterogeneity while managing landscapes where we need to protect life and property. The proposed VTP cannot accomplish this, and the current DEIR fails to meet the requirements of CEQA for the reasons detailed in the above referenced letters. Therefore the VTP and DEIR must be revised and recirculated.

In this letter, we summarize general concerns and recommendations for making improvements that can address failings within the current draft VTP PEIR.

<u>Support and concern related to prescribed fire efforts</u>
In general, CNPS supports the use of presecribed fire as an ecological management tool. We do not find that the VTP would employ prescribed fire in this manner and therefore our comments on the VTP are critical of the VTP's rationale - and lack thereof - of prescribed fire as a treatment tool, and of the VTP's lack of adequate analysis of impacts resulting from its use.

Here we make an important distinction between two California Department of Forestry and Fire Protection (CalFIRE)-related efforts that risk being conflated under the common banner of *prescribed fire*; the VTP and the California Fire MOU Partnership.

Within the VTP prescribed fire is a vegetation treatment tool used to reach a quota of landscape vegetation reduction and represents an agent of habitat loss. Other than for the potential benefits to areas of dry, mixed-conifer forests, prescribed fire as addressed within the Program and DEIR has no scientific bases to be considered ecologically beneficial.

Related to the Fire MOU, prescribed fire is a management tool that is applied and managed to achieve ecological benefits. Well-planned implementation of prescribed fire is at the heart of multi-stakeholder projects developed through California's Fire MOU Partnership, of which CalFIRE is a member.

While CNPS supports the people, organizations, agencies, and motivations behind the Fire MOU Partnership, we remain uncertain how CalFIRE and the Board of Forestry will ultimately reconcile the use of prescribed fire between both a VTP and the Fire MOU Partnership.

California Chaparral Institute, January 12, 2018; letter from Wayne D. Spencer, Chief Scientist, Conservation Biology Institute and Alexandra Syphard, Senior Research Ecologist, Conservation Biology Institute to California Board of Forestry and Fire Protection, January 10, 2018; letter from Robert A. Hamilton, President, Hamilton Biological Inc. to Dan Silver, Executive Director, Endangered Habitats League, January 5, 2018; letter from CJ Fotheringham to Board of Forestry and Fire Protection, January 9, 2018.

[3] The following letters are incorporated herein by reference: letter from Frank Landis, Conservation Chair, CNPS San Diego Chapter, Lucy G. Clark and Fred Chynoweth, Conservation Co-Chairs, CNPS Kern Chapter to Edith Hannigan, Board Analyst, May 31, 2016; Letter from Greg Suba, Conservation Program Director, CNPS to George Gentry, Executive Officer, State Board of Forestry and Fire Protection, February 25, 2013.

Proper plant surveys and mapping must be required prior to project treatments

Prior to proposing any fuel management treatments in California, there needs to be a basic understanding of the ecology of specific vegetation types subject to potential treatments. Individual project planning must include protocol-level, site specific pre-project surveys and consultations with the regulatory agencies before treatment designs are considered. Botanical surveys and vegetation mapping must be conducted in accordance with state standards[4] in order to adequately identify and disclose potential impacts to rare and sensitive native plant species and plant communities (at the alliance and association level).

If fuel management is to be proposed, we recommend that the currently recognized authority on California vegetation, *A Manual of California Vegetation. Second Edition.* (John O. Sawyer, Todd Keeler-Wolf, and Julie M. Evens. 2009. California Native Plant Society, Sacramento, CA) be used as the reference for describing vegetation types, identifying rare plant communities, and how they may be treated under a VTP. The Manual of California Vegetation has been adopted as the standard vegetation classification by State and Federal agencies. It describes vegetation types by dominant species and includes sections on fire characteristics and other natural processes that shape the ecology of each type, regional distribution information, and the rarity ranking of imperiled natural vegetation.

Treatment types and timing must consider and be tailored to plant community types, and therefore must be more complex than currently proposed.

The document states that “restoring native, fire-adapted ecosystems can increase ecosystem resiliency to wildfire, drought, and potentially climate change” (Chapter 2, page 2-11). We recommend that the VTP Draft PEIR define “ecosystem resiliency” for each vegetation type proposed for treatment, and take more of an ecological approach to determining vegetation treatments in general.

If an objective is to restore ecosystem resiliency to wildfire, then having a thorough understanding of each particular vegetation type is critical to determining an appropriate treatment regime. This begins with surveying and mapping vegetation according to state standards to identify vegetation types, and then considering available information on fire characteristics and other ecological processes associated with vegetation types in question.

The VTP must provide unequivocal assurances of project-level public notice, review, input, and transparency. These essential elements are currently lacking.

The VTP lacks the deliberate oversight, public participation, and adaptive management measures needed to prevent unassessed environmental impacts and irreparable damage to natural resources.

Methods of identifying, assessing potential impacts to, and implementing avoidance, minimization, and/or mitigations measures for plant resources within a proposed treatment area as proposed in the VTP Draft PEIR are inadequate across the board.

Often, the ground and vegetation disturbances that occur from manual and mechanical treatments in and around intact rare vegetation types and special status species can cause ecosystem-level changes by disrupting favorable environmental conditions such as shade, moisture regimes, and mycorrhizal

[4] As per *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities.* California Department of Fish and Wildlife. 2009.

associations. Similarly, treatments within rare vegetation types must be based on site-specific ecological conditions, including the fire adaptions of the species occurring within those communities. It is not reasonable to consider that one person, the Project Coordinator in this case, will have the expertise, resources, and time to adequately provide the project-level review necessary. Nor is it lawful to assume so, as the VTP requires us to do.

Site-specific evaluations by qualified botanists and ecologists are needed prior to determining the type of vegetation treatment that should be applied and where, or whether all treatments should be avoided. The focus should be on restoring and protecting intact functioning ecosystems and the processes necessary to maintain those systems.

As described in our comment letters, the VTP provides no way to determine environmental impacts of the Program as proposed. Further, if or when impacts are known on the future projects the VTP provides no assurances for a procedure for public review and comment related to those impacts, nor any process for adaptively managing the Program to respond to new information and/or lessons learned during the implementation of the VTP. These are essential elements that must be addressed before any VTP can be certified.

Lastly, we reiterate our strong conviction that the most effective way to protect lives, property, and the natural environmental from wildfire is through a comprehensive approach that focuses on fuel modifications within and directly around communities at risk, ignitability of structures, and effective land use planning. We maintain that it is within the purview of CalFIRE and the California Board of Forestry to focus on all three of these elements more fully within a VTP and DEIR, and that any VTP will fall short of adequate without doing so.

We strongly urge the Board of Forestry to discontinue development of this version of the VTP and DEIR. As described in our comment letters, the current draft VTP and DEIR is deeply flawed in terms of CEQA, and needs a more scientifically valid approach to reducing risks to life, property, and natural resources. We recommend revising and recirculating a VTP and DEIR that incorporates the recommendations provided by the comments above and within the letters referenced herein.

Sincerely,

Greg Suba
Conservation Program Director
California Native Plant Society

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January 9, 2018

Board of Forestry and Fire Protection
ATTN: Edith Hannigan, Board Analyst
VTP Draft PEIR Comments
PO Box 944246
Sacramento, CA 94244-2460
VegetationTreatment@bof.ca.gov

Re: Draft Programmatic Environmental Impact Report For The Vegetation Treatment Program of the California State Board of Forestry and Fire Protection

Dear Ms Hannigan and Members of the Board:

We appreciate the opportunity to comment on the Draft Programmatic Environmental Impact Report for The Vegetation Treatment Program Of the California State Board of Forestry and Fire Protection ("DEIR," "VTP," "BoF").

The California Native Plant Society (CNPS) and its San Diego Chapter ("CNPSSD") promotes sound plant science as the backbone of effective natural areas protection. We work closely with decision-makers, scientists, and local planners to advocate for well informed and environmentally friendly policies, regulations, and land management practices. Our focus is on California's native plants, the vegetation they form, and climate change as it affects both. CNPS support appropriate land management practices to sustain California native plant species, both on properties dedicated to that purpose (e.g. State, Federal, County, or local and private conservation parks or preserves) and other properties, private and public, where native plants, especially where their continued survival helps provide ecological and genetic buffers for their survival, should catastrophic events destroy them in protected areas.

We strongly agree that fire and invasive species are critical issues that must be actively managed. However, **we strongly recommend that this DEIR NOT be certified, due to lack of substantial evidence to support contentions and conclusions made throughout the document, due to substantial procedural lapses and irregularities, as well as the other issues we list below. We further contend that the VTP cannot serve the purpose for which it was apparently designed, and propose more workable solutions for the Board's consideration.**

Based on the DEIR, we have many issues, including:

1. Whether an EIR is the appropriate document for this project
2. CEQA procedural lapses and irregularities
3. How the DEIR deals with native plants issues
4. How the DEIR deals with climate change
5. Why the DEIR contains so many misstatements based on scientific papers, reliance on anecdotal evidence, and avoidance of scientific advice
6. Why the DEIR contains so many internal contradictions.

The following groups of questions are based on the concerns summarized above. We formally request that the BoF fully consider and respond to our questions in an effort to improve the Draft DEIR by clarifying, among other things, its purpose, rationale, and management structure. Note that this letter contains similar material to CNPSSD comment letters on previous versions of the DEIR, sent February 15, 2013 and May 31, 2016. Those letters also included requests to the BoF to respond to the questions these letters raised. The BoF never responded to that requests, which is unfortunate, as many of those questions were specifically designed to help the BoF write a better DEIR. As a result, the current DEIR repeats its predecessors' mistakes, and the same criticisms still apply. To provide a complete record, all previous comment letters are attached to this letter.

Background

California is inarguably the most complicated state in the US, whether the complexity is biodiversity (California is a global biodiversity hotspot[1]), socio-political, geographic, geologic, or in the massive infrastructure of aqueducts, power grids, farms, forests, and cities that allow over 38,000,000 people to live here. Worse, climate change is affecting everything, from water availability to fire behavior.

Writing a programmatic EIR ("PEIR") is about analyzing the predictable, cumulative impacts of a program. Writing a PEIR for a program that proposes a diverse set activities across 23% of California is a truly titanic undertaking that the writers of the DEIR did not engage in.

The main body of the DEIR is only 751 pages long (the total length including appendices is 1291 pages),. To show why this is a problem, compare it to the natural resources management plan and Mitigated Negative Declaration for 1,092 acres of urban park in San Diego, which was 159 pages long[2]. The DEIR, supposedly an analysis of a long-term program that proposes to treat up to 23,000,000 acres over decades, is only 5.5 times longer than a routine local management document that deals with a few miles of trail. There is no way the DEIR can provide adequate analysis in so short a length, and it does not. The scale of the DEIR is orders of magnitude too small for the VTP. Unfortunately, the issues do with the DEIR do not stop at its short length.

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[1] Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B., and J. Kent. (2000). Biodiversity hotspots for conservation priorities. *Nature*, 403(6772), 853-858.

[2] City of San Diego (2015). Carmel Mountain/Del Mar Mesa Natural Resources Management Plan and Trail System.

1. Is an EIR the correct document for the VTP, and were all affected parties properly notified?

1.A. Is an EIR the correct document for the VTP? We are glad, in this fourth iteration of the project, that maps were finally included (Appendix A), as project maps are a fundamental CEQA requirement.[3] The issue here is that the maps appear to contradict the text over the boundaries of the VTP.

According to the text, the area covered by the VTP is the State Responsibility Area ("SRA"), the land where State is financially responsible for the prevention and suppression of wildfires. SRA does not include lands within city boundaries, zoned for agriculture, or in federal ownership.

Unfortunately, in looking at the maps that cover CNPSSD's territory—the South Coast Treatment Areas and the Colorado Desert Treatment Areas Maps for San Diego and Imperial Counties respectively—we found numerous jurisdictional issues. The maps showed many fuel breaks within the City of San Diego and other urban areas, and it also showed fuel breaks in areas zoned for agriculture, such as the San Pasqual Valley Agricultural Preserve. Most importantly, it showed fuel breaks on federal lands, including Marine Corps Air Station Miramar, Superstition Hills US Naval Reservation, Tijuana River National Estuarine Research Reserve, San Diego National Wildlife Refuge, Cabrillo National Monument/Point Loma Naval Reserve (the boundary is unclear), and the Cleveland National Forest. It also showed fuel breaks and other treatments on all or most of the Indian reservations in San Diego and Imperial County. Projects involving both federal lands require Environmental Impact Statements under NEPA, in this case a combined EIR/S.

Why do the maps disagree with the text, which says repeatedly that only state and private lands are affected by the VTP? If the DEIR text is correct, why do the maps show VTP treatments on federal lands? If the maps are incorrect, where are the correct maps? Does the correction affect statements that 23,000,000 acres are available for treatment? If the maps are correct and the VTP covers federal and tribal lands, where is the EIS? Where are the consultations with all the relevant entities?

1.B. Were all affected parties properly notified? We asked one of the local Indian tribes, and our query was the first time they had heard of the VTP DEIR. **Were all the federal and tribal entities included in the maps in Appendix A.2 properly notified, , following CEQA §15087? Were affected Indian tribes consulted, pursuant to AB 52 (2014; Gatto, Native Americans: California Environmental Quality Act)? If not, why not? What can be done to remedy the situation?**

2. With respect to CEQA, we noticed numerous procedural lapses and irregularities:

2.A. What exactly is the Proposed VTP, and what are its boundaries in space and time? This is a critical question, because CEQA requires that the DEIR properly describe the VTP and its limits in space and time.

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[3] CEQA § 15124 (a): "The precise location and boundaries of the proposed project shall be shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map."

- We are told (p. 2-2) "[t]he VTP is a formal program that would comprehensively direct the management of the wildland landscape within BOF's State Responsibility Area, an area comprised of over 31 million acres of private land. The VTP is projected to treat approximately 60,000 acres of this landscape annually, or 600,000 acres over a 10-year time frame. " **Why is the relevant frame 31,000,000 acres and not 600,000 acres?** Everybody knows that fuel breaks have to be cleared frequently, ideally annually, to be effective. To pick but one data point, scientific research in southern California suggests that chaparral regrows to the point where it supports fires after 1-2 years.[4] **Why does the VTP not cover 120,000 acres (60,000 acres/year times 2 years?), instead of the 3,938,563 acres of "treatable acres within the fuel break treatment area" across the state (p. 2-24)?** The total acreage is unusably vast: assuming each acre of the 3,938,563 acres is cleared once, it would take over 65.6 years (3,938,563 acres/60,000 acres/year) to clear every proposed fuel break in the state once. Even if fuel break clearance is focused entirely on South Coast shrublands, it would take 4.2 years (252,806 acres/60,000 acres/year) to clear each fuel break once. **Since the clearance rate does not add up, why are these numbers used? What can be done insure that the VTP clears and maintains critical fuel breaks, rather than randomly scattering efforts and promoting weed invasions in areas that are cleared once and neglected thereafter?**
- **Why do the maps show fuel breaks on high value spaces?** As noted in 1. above, the project maps show treatments on federal and tribal lands. In San Diego and Imperial Counties, fuel breaks are also shown covering the *entire unincorporated towns*, including Julian, Jamul, and Borrego Springs, as well as Torrey Pines State Reserve (within the City of San Diego) and the San Diego Zoo Safari Park, just to name a few of the many, many obvious landmarks that have fuel breaks modeled on top of them. **What fire danger could be ameliorated by bulldozing 300'-wide fuel breaks through tourist towns? Or by wiping out the main exhibit areas of one of the world's foremost conservation organizations? What fire danger could be lessened by clearing Torrey pines (*Pinus torreyana,* CRPR list 1B.2), along with many other sensitive species, destroying the only vehicular entrance to a popular park visited by thousands of people every day, and devastating the poorly consolidated sandstone on which the park is based? How many other beloved public attractions across the state would the VTP pay to have cleared as strategic fuel breaks? How can damage within these significant assets be justified under the rubric of saving them from fire?**
- Similarly, there are fuel breaks modeled throughout the canyons of the City of San Diego and neighboring jurisdictions. **What good is a fuel break that is 300 feet wide but less than 300 feet long, where a road crosses a small urban canyon?** Organizations like Canyonlands and the Ocean Discovery Institute have spent years on volunteer ecological restorations in areas marked for total clearance, and one of their goals is making it possible for disadvantaged urban families to have a safe experience in neighborhood canyons. **Have they been contacted for their input on the VTP? How would the VTP's proposed work impact such groups?**
- **Why is there a fuel break at Algodones Dunes?** One answer is that the vegetation mapping system classifies all desert vegetation as "desert scrub" and assigns a medium fire risk to it, ignoring the tremendous diversity of actual desert vegetation. As a result, there are

[4] {Price, 2012 #18}

fuel breaks proposed for the Algodones Dunes, on the east side of the Salton Sea, throughout Anzo Borrego State Park and the town of Borrego Springs, and in many other non-flammable, high erosion, areas. The problem should have been obvious to anyone proof-reading the maps. **Were the maps checked prior to publication? What other egregious errors did the mapping protocol cause, in terms of proposing destructive treatments such as useless or unworkable fuel breaks? By how much do mapping errors inflate proposed 3,938,563 "treatable acres within the fuel break treatment area" beyond what is actually treatable?**

- **WUI mapping is inadequate**. A simple example is Black Mountain in San Diego, zip code 92129, within the boundary of the City of San Diego. The Mountain itself is a San Diego City park, home to a number of sensitive species, and covered with 30 separate fuel breaks (calling each branch of a complex, dendritic pattern a separate fuel break). I (Landis) live near it, well within a high fire zone, due to my relative proximity to the chaparral and coastal sage scrub on the mountain. By San Diego standards, I am in the WUI, but not by the standards of the VTP. **Why not? How many different definitions of the WUI are used in official documents, and why was this not standardized so that the VTP uses the same definitions as the people it proposes to service? Why clear 300' wide fuel breaks in vegetation that is not even considered to be in the WUI, but not perform WUI treatments within it? Why limit WUI clearance to areas putatively outside urban zones?**
- **Ecological restoration treatments are not always consistent with the working definition of ecological restoration provided in the glossary.** (p.2-29) "Ecological restoration would also improve range and forage on private property, increasing land management options for private landowners. This treatment type could be implemented through grazing, thinning, understory burning, and other methods." This appears to say that the State will pay ranchers to graze their own animals on their own land (under the theory of "improving forage" through "grazing"). **Is this correct? If not, does it mean that the VTP will pay to type convert vegetation dominated by woody plants to vegetation dominated by grasses? How is this not a permanent impact?** The VTP looks exactly like older programs designed to convert chaparral into grassland. To mitigate anthropogenic climate change (per state law), we desperately need more woody plants on the landscape sequestering carbon, not more annual grasses (which do not sequester carbon) and more cattle (which emit substantial greenhouse gases). Indeed, beef production is by far the biggest source of greenhouse gas emissions among agricultural sectors.[5] **What are the ecological and greenhouse gas impacts of type-converting shrublands to grasslands? If the VTP claims to have no impact on greenhouse gas emissions, why promote grasslands and grazing? If it cuts back on grazing, how will that affect the acreage it treats under ecological restoration? How mitigating greenhouse gas impacts affect the acreage targeted under "ecological restoration?"**
- The VTP seeks to treat 60,000 acres per year, with 231 projects per year averaging 260 acres each (p. 2-35). This is huge (60,000 acres is 93.75 square miles, roughly the size of Oakland and Berkeley combined), but it is not clear if it is appropriate. For example, if every one of the 23,000,000 acres "appropriate for a treatment" were to be treated just once, it would take over 383 years (23,000,000 acres/60,000 acres per year), which is clearly inadequate for any

[5] {Ranganathan, 2016 #26}

kind of sustained vegetation management, unless the desire is to promote old growth vegetation. Clearly the VTP actually intends to treat a small subset of land "appropriate for a treatment," but the actual parcels to be treated are not discussed, mapped, or analyzed, and may not be known yet. **If the actual parcels are not yet known, how can anyone write a PEIR that offers any useful analysis that is consistent with CEQA? How can land owners, their neighbors, and government programs that cover parcels be informed when a VTP project that tiers off this DEIR is proposed for a parcel?**

- The VTP breaks California down into ten ecoregions; it proposes three types of fuel management treatments, at the Wildand Urban Interface (WUI), on fire breaks, and as ecological restoration; it proposes a six treatment activities including two types of prescribed burns (purportedly half of the treatments), grazing with non-native herbivores, mechanical clearance, clearance by hand, and herbicide application. Just a simple combinatorial analysis, 10 ecoregions times 3 management treatments times 6 treatment activities, leads to 180 different scenarios, even without mixing treatment types. What is presented in chapter 4 is an anecdotal tour mentioning things that have happened under some treatments, often with contradicting factors. This does not provide an in-depth, programmatic analysis of the impacts of the VTP in any place or time. **Where is the quantitative analysis of the impacts of all 180 scenarios? What will happen when, where, why, how often, what factors will determine which treatment is used, what are the impacts of each scenario, what are the cumulative impacts, and what can be done on a programmatic level to avoid or mitigate those impacts?**

2.B. Why is the DEIR written with such lack of detail?

As we understand it, the courts have ruled that "[a]n accurate, stable and finite project description" in an EIR is necessary to analyze its impacts, and a "truncated project concept" violates CEQA.[6] While exhaustive detail is unnecessary, CEQA mandates that EIR project descriptions should be sufficiently detailed, and sufficiently accurate, to permit informed decision making.[7] **Given that the DEIR does exactly the opposite of what CEQA policy states and courts support, why was the DEIR written that way? Would it not have been better to follow CEQA and relevant case law?**

As shown above, the accuracy of the project description is in question. The stability of the description is also questionable, if most of the participants have yet to announce themselves. Similarly, the boundaries of the project, both spatially and temporally, are questionable, as the VTP has no sunset date. **What exactly is the VTP? Can it be described accurately? Will that description remain stable? What are its precise boundaries each year, and when will it end?**

The programmatic aspect of the DEIR is also given short shrift. PEIRs are supposed to analyze impacts " as specifically and comprehensively as possible."[8] Indeed, the role of a PEIR is two-fold: it includes "more exhaustive consideration" of impacts, mitigation, and alternatives than an individual project EIR could include, and it considers cumulative impacts[9]. Projects are supposed to "tier" off the PEIR, depending on and supplementing its analysis only, not doing the work that it was supposed to contain. CEQA further notes that "[t]iering does not excuse the

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[6] Sacramento Old City Association. v. City Council (1991), Rio Vista Farm Bureau v. County. of Solano (1992)
[7] CEQA Guidelines § 15124
[8] CEQA Guidelines, 15168(a), (c)(5)
[9] CEQA Guidelines, 15168(b)(1)-(2).

lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis to a later tier EIR or negative declaration."[10] Also, "[d]esignating an EIR as a program EIR also does not by itself decrease the level of analysis otherwise required in the EIR."[11] Programmatic EIRs must contain "extensive, detailed evaluations" of a plan's impacts on the existing environment.

The DEIR's avoidance of in-depth analysis of predictable project-level impacts, predictable cumulative impacts of projects within the same area, and predictable cumulative impacts as a result of repeated projects on the same parcel in the same area is contrary to CEQA's direction on the contents of EIRs and of programmatic EIRs in particular. CEQA does not allow agencies to defer analysis of a plan's impacts to some future EIR for specific projects contemplated by that plan. The courts have ruled that environmental review must take place before project approval, and specifically that, in a programmatic EIR, tiering "is not a device for deferring identification of significant environmental impacts that the adoption of a specific plan can be expected to cause."[12] **Given that the DEIR does exactly the opposite of what CEQA policy states and courts support, why was it written as it was? Would it not have been better to follow CEQA and case law? Is it possible to write a PEIR that accurately describes the VTP and analyzes all its predictable impacts in reasonable detail?**

2.C. Why are the thresholds presented presumed to be adequate? For example, the DEIR states that the VTP would have a significant impact if it contributes to the substantial, long-term decline in the viability of any native species (p. 4-182). Unfortunately, there is no threshold to determine what "substantial," "long-term," and "viability" mean in order to determine when a significant impact has occurred. Without thresholds, there is no mechanism for determining whether impacts have been mitigated to below the level of significance, and thus the analysis is incomplete.

The thresholds for "significant impact" (p.4-182) are, if anything, more problematic, and this can be shown by looking at them in order:

- "a) Threat to eliminate a plant community." **What is a plant community with respect to the WHR? All national programs deal in hierarchically defined vegetation types, not plant communities. Is a plant community a vegetation alliance, a unique stand, a vegetation series? Is elimination only significant when it is the last vegetation stand of its type in the world? In a VTP bioregion? In a County? In a municipality? What are the cumulative impacts of loss of plant communities? What about type conversion, such as done under the rubric of "ecological restoration" designed to promote grazing?**
- "b) Violation of any state or federal wildlife protection law." This seems unambiguous, but the purpose of a PEIR is to analyze predictable impacts. For instance, the Torrey Pines mentioned above are a CRPR List 1B.2 species, but they are not covered by the California or Federal Endangered Species Acts ("CESA" and "FESA" respectively). **Is it therefore okay to bulldoze Torrey Pines, so long as the only Torrey Pine "plant community" is not threatened with elimination?** CEQA requires analysis of all List 1B species as if they were covered by CESA, so the only protection these and all other non-listed CRPR list 1B and 2B species get is if impacts are analyzed in a CEQA document. Indeed, their presence normally

[10] CEQA Guidelines 15152(b)
[11] CEQA Guidelines 15160.
[12] Stanislaus Natural Heritage Project v. County of Stanislaus (1996)

triggers use of an EIR for a project on lands where they occur. **Therefore, where are all the impact analyses to sensitive plant species impacted by the VTP throughout the state?**

- "c) Contribution either directly (through immediate mortality) or indirectly (through reduced productivity, survivorship, genetic diversity, or environmental carrying capacity) to a substantial, long-term reduction in the viability of any native species or subspecies at the bioregion scale." **What monitoring measures will be undertaken to insure that ALL of California's 6,500-odd native plant taxa that are affected by the VTP will not show substantial, long-term reduction in viability?** According to Appendix I, monitoring and communication (p.I-1), "due to lack of resources the more rigorous "active" adaptive management program cannot be implemented at this time." This seems to suggest that this threshold of significance is unworkable. **How will the Project meet this threshold?**
- "d) Adverse effect, either directly or through habitat modification, on any species identified as a special status species in local or regional plans, policies, regulations, or by CDFW or USFWS." For CNPSSD's territory alone, there should be analyses for the dozens of species covered by the South County Multiple Species Conservation Plan, the proposed North County Multiple Species Conservation Plan, the City of San Diego Vernal Pool Habitat Conservation Plan, the Imperial County portion of the Desert Renewable Energy Conservation Plan, and the San Diego Gas and Electric Company Natural Communities Conservation Plan. **Where are these analyses? Each plan is going to be affected multiple times by multiple VTP projects. Where is the overarching, in depth analysis in the PEIR, off of which individual projects can tier?**
- "e) Net effect in a local subsequent activity area was a substantial increase in the population of invasive species AND this occurred on over 10 percent of a WHR lifeform in a bioregion." **Why is this relevant or even attainable?** The only time this would be relevant is when 10% of a "WHR lifeform" (e.g. oak woodland in the Central coast, or millions of acres) became affected by a new invasive species, and by the time an invasive species is that widespread, it is impossible to get rid of and possibly hideously costly. To give a comparison, two closely related invasive beetle species, the Polyphagous and Kuroshio Shot Hole Borers (*Euwallacea* spp.) will, if unchecked, kill 38% of the 71 million trees in 4,224 square mile Los Angeles County, and it will cost up to $36,000,000,000 to remove all the dead trees.[13] Yet this does not cover even 10% of the South Coast bioregion, so this problem, which is larger than the probable entire VTP budget over its entire lifetime, is insufficient to be considered a significant effect under the VTP. **Is this correct? Why is this criterion consistent with CEQA? Who selected it? How can the VTP deal with outbreaks of highly damaging invasive species (an issue which BOF recognizes as a serious problem, if only because of the fire threat of millions more dead trees?) under this criterion?**
- "f) Creation of a public nuisance." Superficially, this seems unobjectionable. However, it interacts problematically with local ordinances. For example, the City of Escondido Weed and Rubbish Abatement Program defines weeds as:" (a) *Weeds* as referred to herein, including: (i) weeds which when mature bear seeds of a downy or wingy nature; (ii) sagebrush, chaparral and any other brush or weeds which attain such large growth as to become, when dry, a fire menace; (iii) poison oak and poison ivy when the conditions of growth are such as to constitute a menace to the public health, and weeds that are otherwise

[13] http://www.latimes.com/local/california/la-me-trees-change-20170427-story.html, accessed December 31, 2017.

noxious or dangerous; (iv) overgrown vegetation which is likely to harbor rats or vermin, or which constitutes a fire hazard; (v) dry grass, stubble, brush, or other flammable material which endangers the public safety by creating a fire hazard."[14] For projects in Escondido, wholesale clearance of chaparral would be elimination of a public nuisance, despite the significant impacts such removal would cause. **What are the cumulative impacts of the interactions between the VTP and anti-nuisance regulations such as the Escondido ordinance shown above? How are these impacts going to be avoided or mitigated?**

2.D. Why does the DEIR defer analysis of so many impacts and creation of mitigations until after it is approved? CEQA requires EIRs to be detailed, complete, and contain a sufficient degree of analysis to let the public and decision-makers understand the proposed project's adverse environmental impacts, so that corrections can be made and an informed decision can ultimately be undertaken.[15] As we understand it, the courts repeatedly have ruled against deferring analysis until after the EIR is approved.[16] Similarly, EIRs are generally not allowed to defer evaluation of mitigations.[17] **Why does the VTP DEIR resort to these tactics so often?**

2.E. Why does the DEIR inadequately analyze so many impacts from the VTP? Under CEQA, "[a]n EIR shall identify and focus on the significant effects of the proposed project."[18] As we understand it, the courts have ruled against merely incorporating the conclusions of an analysis, and that an EIR must contain facts and analysis as well.[19] We deal with one glaring botanical example of this problem below in 3.A., but it is ubiquitous throughout the DEIR. **Why does the DEIR resort to inadequate analysis so often?**

2. F. Why are the VTP Objectives so badly defined? (p.2-5)

- **Aren't Objectives 2, 3, and 4 subsets of Objective 1?** Objective 1, "Modify wildland fire behavior to help reduce losses to life, property, and natural resources,"(p. E-3) includes objectives 2 through 4 so one can argue that these objectives are redundant. These objectives perhaps refer instead to the three treatment activities respectively deal with fire in the wildland urban interface ("WUI"), fire breaks, and "ecological restoration," although they are they not named as such. In any case, they are, at best, sub-goals of Objective 1. **Why separate them out?**
- **Can the VTP accomplish Objectives 2 and 3?** Objective 2 states: "[i]ncrease the opportunities for altering or influencing the size, intensity, shape, and direction of wildfires within the wildland urban interface," and Objective 3 states: "[r]educe the potential size and total associated suppression costs of individual wildland fires by altering the continuity of wildland fuels." **If the average VTP project is 260 acres, less the half a square mile, and embers can travel up to 12 miles (see section 4 below), are VTP projects at the right scale to make any meaningful difference in fire behavior? What kinds of fires does the VTP envision projects protecting against? Is protecting against "VTP-scale" fires**

[14] http://www.qcode.us/codes/escondido/?view=desktop&topic=11-2-2-11_45, accessed December 31, 2017
[15] CEQA Guidelines § 15151.
[16] No Oil, Inc. v. City of Los Angeles (1974), Sundstrom v. County of Mendocino (1988), Gentry v. City of Murrieta (1995).
[17] CEQA Guidelines § 15126.4(a)(1)(B)
[18] CEQA Guidelines § 15126.2(a)
[19] Citizens of Goleta Valley v. Board of Supervisors (1990)

necessary and cost effective? These two objectives seem to be scaled too small to control the wind-driven fires that cause a vast majority of destruction in California.

- **What is meant by Objective 4?** Objective 4 is to "[r]educe the potential for high severity fires by restoring and maintaining a range of native, fire-adapted plant communities through periodic low intensity treatments within the appropriate vegetation types." This assumes:
  1. That plant communities and vegetation types are equivalent. This is problematic because the theory behind plant communities *explicitly assumes that the environment is a constant, plant communities are superorganisms, and they undergo succession until they come into equilibrium with the existing constant climate*. Vegetation, conversely, is merely plants occur in a particular time and place, and vegetation types are generally named by the most dominant species. They are only the same thing to people who have had no formal training in plant ecology.
  2. That all "fire-adapted plant communities" require low-intensity treatments. As shown above, fire-adapted plant community is a bit of an oxymoron. If the question is, how do plants respond to fires, then it is obvious that some do well with low-intensity fires, others absolutely require high-intensity fires to reproduce. Two examples are the many manzanita (*Arctostaphylos* spp.) and ceanothus species (*Ceanothus* spp.) that have no burls and require fire to stimulate germination of their seeds after the adults die. Many of these species are rare, and some dominate their local vegetation. On a larger scale, everything from chaparral to lodgepole pine forests have high-intensity, stand-replacing burns as a normal, if rare, disturbance. Eliminating high-intensity fire from the landscape eliminates all these species. **What are the impacts to species that depend on high-intensity fires of eliminating high-intensity fires from their habitats? How will the VTP mitigate for these impacts?**
  3. **This objective ignores climate change.** Restoring fire only makes sense in a world where the climate is constant. In 2017, when there are Santa Ana winds in December, it sheer romanticism. The VTP must address how climate change affects fire behavior. **What objective would be congruent with the need to fight fire in a hotter world with more extreme conditions of drought and flood, especially with rapid alternations between the two?**
  4. **What about invasive plants?** Another bit of unfounded romanticism embedded in this objective is the notion that we can restore California to the days when Indian Fire dominated the dynamics of ecosystems. If only. While California's native species have adapted to 10,000-20,000 years of Indian Fire, some of the weeds coming from Eurasia and Africa have adapted to 50,000-100,000+ years of human fire. Some invasive species are more fire-adapted than any local species, and that is one reason why weed-fields spring up after fires. **How will the VTP deal with invasive species that are favored by fires, especially low-intensity ones?**

  As both the California Chaparral Institute and CNPSSD have argued repeatedly, there is too much fire in chaparral, especially in southern California. The simplest way to improve this fire return interval is to not burn in chaparral for the next century or so. Both Objective 4 and the VTP itself need to become consistent and transparent about what they intend to burn, where, and why. CNPSSD does not disagree that some vegetation, such as some ponderosa pine stands in the Sierra Nevada, could benefit from controlled burns. These need to be called out so that the impacts of treating them can be analyzed. **Why were they not identified in this DEIR?**

2.G. Why does the Alternatives analysis depend so much on acres treated? One major issue here is that treating 60,000 acres per year is not one of the official objectives of the VTP, so it should not be used to judge alternatives.

- **Why was the No Project Alternative derided?** Officially (p. 3-5), the reason is that "...many of the types of treatments described in Chapter 2 would require individual EIRs, which are time consuming, costly, and a significant workload increase on staff. Consequently, it may not be possible to complete CEQA requirements within time frames associated with certain grants and other funding opportunities or within the staff resource capabilities of non-government organizations in the SRA. The current program structure also often includes extensive considerations of effects and may include duplicative analysis of cumulative impacts." This is the wrong cost comparison. While it makes sense to look at the staff allocated to this task and the length of the CEQA process, here are some tradeoffs that also need to be considered. **Is doing a proper CEQA review too expensive to consider?** Perhaps not.
  1. SDG&E was assigned responsibility for causing the 2007 Cedar fire in San Diego County. To date it and its insurers have paid out $2.4 billion in claims from thousands of lawsuits. The VTP as described will result in dozens, if not hundreds, of prescribed fires per year, even though climate models suggest that extreme drought and lower fuel moisture levels will be the new normal. **Is avoiding an extensive review for a prescribed fire, or even 100 prescribed fires, cheaper than paying the costs of the conflagration that an escaped fire might cause in such conditions?** Under the VTP, BOF will make itself one of the biggest, single sources of fire ignition in the State . **How does the cost to the State of preventing a prescribed fire from escaping compare with the cost to the State of fighting the resulting blaze and paying for whatever it damages?**
  2. Not that BOF has the option of ignoring the California Natural Communities Conservation Program administered by CDFW, but it should realize that tacitly ignoring it (as done in the DEIR) causes enormous costs for the state. The NCCP is designed to aid both development and conservation in California, by allowing counties and other entities to programmatically determine which lands are set aside for conservation, and which can be developed. The key point is that any NCCP program only works if the entity administering the program meets CDFW's goals in keeping the species protected by the NCCP from being extirpated within the NCCP's area. If the lead NCCP agency fails in this goal, it loses permission to administer the program, both the lead agency and CDFW are potential targets for lawsuits to force them to comply with California law, AND DEVELOPERS SUFFER TOO, because they lose the ability to streamline review of their projects. The VTP, by ignoring NCCPs within the State Responsibility Area, puts numerous NCCP projects at risk, with potentially huge legal and opportunity costs to the lead agency and the state. **How do the cost savings to the State for managing the VTP compare to the cost to the State of disrupting these programs?** The money comes out of one state budget, after all.
  3. While the costs of losing listed and sensitive species are difficult to quantify monetarily, except when they are photogenic species like the Torrey Pines mentioned above, the costs of dealing with invasive species are estimated to be in the billions, as noted above for the Polyphagous shot hole borer. Slipshod review can move pathogens and cause huge

losses. **How do these costs to the State compare with the costs to the State of doing a proper CEQA review?**

- **Why is the VTP frame of reference the entire State Responsibility Area, and not the acres treated per year?** The problem here is that, on an annual basis the VTP is proposed to treat 60,000 acres/year, which is 0.6% of the proposed area for WUI treatments (10,064,865 acres, p. 3-16), 1.5% of the proposed area for fuel break treatments (3,938,563 acres, by calculation), or 0.65% of the proposed area for ecological restoration treatments (9,211,560 acres, by calculation). The point here is that there's little reason to assume that the VTP can implement treatments in its entire, modeled treatment area in a time span that is relevant to either modifying fire behavior (clearing once per century or less?) or fiddling with vegetation characteristics (one treatment per century?). **The key question is, what can the VTP do each year to meet its objectives in a useful way? Why was this not even evaluated, let alone used as the frame of reference for evaluating alternatives?**
- **Why were the Very High Fire Risk Severity Zones considered?** They appear to be areas where prescribed burns are most likely to escape control. **Why are these areas considered for prescribed fires? How does drought affect this designation? Why are 11,787,015 acres (51.2% of VTP, 38% of SRA) considered to be in these zones? If it is such a big area, isn't it worthless as a designation? If there are communities at high risk outside this designation, what is the value of this designation and this alternative?**
- **Why was Alternative D considered if, per p. 4-113 (air quality), "**[t]hrough implementation of AIR-1 and AIR-2 no prescribed fire activities will allow be allowed to exceed overall daily air quality thresholds. As a result impact on air quality from prescribed fire emissions would be less than significant after mitigation." It is alleged that the VTP itself can be mitigated to less than significant effects. **Isn't consideration of this alternative a contradiction? Which is correct, that air quality impacts from the VTP restrictfull implementation of the VTP, or that the VTP can mitigate air quality impacts below the level of significance?**

We strongly suggest that the BoF consider how much they truly need to work on, and make that the area of the VTP. **If the goal is to make a positive difference through useful objectives, how can this be achieved?**

2. H. The history of the DEIR is incomplete (p. 1-21). This is the fourth DEIR released, with previous releases in 2013, 2015, and 2016. **Where is this history? Where are the responses to all the letters sent in? Why have all previous comments on this, from the previous versions of the DEIR and the scientific review panel, been ignored? Why have previous versions of the DEIR not been sent to the lead agency for certification?** To support resolution of this issue, all previous comment letters made by CNPSSD are attached. Please respond to those comments.

3. With respect to native plant issues, we noticed many problems. The treatment of native plants issues is riddled with issues, starting with the trivial (CNPS is repeatedly referenced in the DEIR, but the acronym is not spelled out nor included in the front glossary). In addition, the plural of plant is not vegetation, and vegetation has different issues than plants, despite the attempt of the DEIR to bundle them together), and going rapidly to the seriously non-functional. We have the following questions about how native plant issues were treated in the DEIR:

3. A. Why was Mitigation Measure BIO-1, not carried out in preparation of the DEIR itself? The Torrey pines example above can be flogged to death, but it is worth noting that the fuel breaks modeled around the Torrey Pines area, if cleared per the VTP, would wipe out the world's population of *Dudleya brevifolia*, a state endangered species. **Why was no attempt made to avoid known populations of listed species? Why was little or no attempt made to avoid highly restricted state-owned lands, such as state reserves within state parks, or CDFW ecological reserves?** With GIS, this would have been a trivial analysis: overlay proposed VTP project areas with known CNDDB occurrences and with reserve lands, then take the places where they match *out of the VTP*. After all, the lands proposed for the VTP are far more vast than the Project ever hopes to treat CEQA requires avoidance as well as mitigation. **Why was there no attempt to avoid predictable impacts?**

How does this meet CEQA Guideline 15125(c): "The EIR must demonstrate that the significant environmental impacts of the proposed project were adequately investigated and discussed and it must permit the significant effects of the project to be considered in the full environmental context[?]"

Note that CEQA requires this analysis in all EIRs. It is not option, nor, as noted above, is it allowable to forego this impacts analysis until after the VTP DEIR is approved.

- **Where is the detailed evidence that this analysis was ever done?**
- **What were the detailed results of this analysis?**
- **What can we check to determine that this analysis was done properly, so that we can help fix any deficiencies?**
- **What were the impacts to populations of sensitive species? How many will be lost? How many will need to be transplanted or replanted? How many new populations were discovered?**
- **How are the impacts to each species to be mitigated below significance?**
- **What are the cumulative impacts?**
- **How are they to be mitigated below the level of significance?**
- **Are there unavoidable impacts? Where is the declaration of over-riding consideration for them?**
- **How did impacts to sensitive plants and the mitigation thereof influence the design of the VTP?**

A fundamental point is that the Program does not affect all listed and sensitive species, it affects a subset of them. **Why was this subset not identified in the VTP, avoided to the extent feasible while still protecting life and property, while mitigations were proposed for the rest?**

3.B. Why is the biological description of the project area so incomplete? In section 4.5 Biological Resource (p. 4-142) " The bioregion was determined to be the appropriate scale to analyze the impacts of the proposed program." **Really? The entire South Coast from Ventura County to the Mexican border is homogeneous enough that analyzing as a single unit makes sense?** Indeed, it says in the description of the "South Coast Ecoregion (p.4-155) that " [m]ore than 150 species of vertebrate animals and 200 species of plants are either listed as protected or considered sensitive by wildlife agencies and conservation groups (Hunter, 1999 [**Why not reference the CNDDB for a listing less than a decade old?**])...The South Coast's widely variable geography and diverse climate have given rise to remarkable biological diversity." **Where is the analysis of the hundreds of sensitive species and "remarkable biological diversity" of this region? Why was only one page devoted to it?**

The description of the "ten ecoregions" used in the analysis (p.4-85-4-109) is not useful for environmental analysis. It does not describe what is important, it does not describe what is impacted, it does not use scientific names, but it does lump together plants with radically different fire ecologies and pretends they are equivalent. Indeed, it does not describe concerns or in any way highlight which bits of information are actually useful for CEQA analysis.

According to CEQA,"[a]n EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published."[20] This includes the plants and animals within the project's boundary. Section 4.5 fails to do this.

Worse, the description of impacts is useless. To be useful for tiering, the VTP needs to describe predictable impacts to all sensitive species. The VTP needs to avoid impacts that are predictable and avoidable, it needs to mitigate impacts that are mitigable, and it needs to disclose impacts that are significant and unavoidable, so that the decision makers of the lead agency can determine if the purported benefits of the VTP outweigh the damage it causes. The analysis does none of this. **Where is the impacts description and analysis? What impacts can be avoided at the programmatic level?**

3.C. Where is the template for individual projects? Section 4.5 (p.4-142) says that " A focused analysis at the scale of the individual project ("subsequent activity") is required by the Project Scale Analysis (see Appendix J) prior to implementing an individual treatment under the proposed Project." Appendix J is "Prjoect Scale Analysis **Burn Planning" [emphasis added].** It is not even a CEQA-compliant checklist. **How will individual projects be analyzed? Since no attempt was made to include the checklists of previous versions, presumably they will use a traditional CEQA analysis. Is this correct?**

3.D. Why are the biology mitigation measures vague, unenforceable, and inadequate? CEQA requires all EIRs to not only identify significant impacts but also to find ways to mitigate them below the level of significance as much as possible.[21] Furthermore, the mitigation measures must be enforceable.[22] As we understand it, the courts have ruled against mitigation measures that are vague and unenforceable. [23] **Why does the VTP DEIR resort to these tactics so often? Where is the detailed, complete, and sufficient analysis in the DEIR to allow anyone to conclude that the VTP will not have significant individual and cumulative impacts?**

3.E. Why is Mitigation Measure BIO-1 (p. 4-211) thought to be sufficient or workable? BIO-1 is unworkable, as it does not cover sensitive species on the CRPR list (note that the CNPS list has been the California Rare Plants Rank list for many years now), nor does it cover species protected by cities and counties. **Why is VegCAMP labeled as a "successor" to the CNDDB?** The two are entirely separate programs, one for sensitive plants, one for vegetation. **As a basic test, what is the difference between plant species and vegetation?**

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[20] CEQA guideline § 15125
[21] Public Resources Code, §§ 21002, 21061.1; CEQA Guidelines §§ 15021(b), 15364
[22] Public Resources Code, § 21002; CEQA Guidelines §§ 15002(a)(3), 15126.4(a)(2)
[23] Anderson First Coalition v. City of Anderson (2005)

Why does Mitigation Bio-1 designate the Project Coordinator to conduct a field review of any proposed project? What qualifications demonstrate that the Project Coordinator is competent to perform field identifications? Where is this competency requirement specified in the VTP? How will qualifications be assessed? The problem is that, unless the Project Coordinator is a qualified botanist, (s)he will lack the ability to determine how accurate the CNDDB or any other database is, will not know when or how to survey (the excellent guidance from CDFW and CNPS is inadequate without real training), will not know how to collect specimens, nor where to send them in problematic cases, nor how to deal with any truly complex issues.

A second problem is that all databases are insufficient. The CNDDB states, "[W]e cannot and do not portray the CNDDB as an exhaustive and comprehensive inventory of all rare species and natural communities statewide. Field verification for the presence or absence of sensitive species will always be an important obligation of our customers."[24] Trained botanists know this. Untrained bureaucrats do not. **Why is a database check thought to be sufficient screening?** Even when records are accurate, most plants in a nine-quad search are not found in something as small as a 260-acre plot, unless they are already known from that precise area. **How can anyone use this data alone to protect native species?** Wildlife agencies insist on focused surveys in the proper season as a way to determine the presence or absence of species thought *possibly* to occur in a site, due to a CNDDB search turning up the possibility of the plants occurring in the area in suitable habitat. Reputable botanists also check the Consortium of California Herbaria. Impacts and mitigation are then based upon whether the plants are found, how many plants are found, where they are relative to the project, and whether the project can avoid some or all of the plants. Only then are appropriate mitigations worked out.

It is routine to find new populations of sensitive species or even new species in areas (such as large, old ranches) that were never or rarely surveyed. The author of this letter (Dr. Landis) found what eventually turned out to be a new species of *Eriastrum* in 2007, on a wind farm project in the Tehachapis. He currently is helping with a study defining the current range of the List 1B Campbell's liverwort (*Geothallus tuberosus*), which occurs adjacent or on the proposed fuel break clearance on Del Mar Mesa, but which is not yet in the CNDDB. The San Diego Plant Atlas, since 2003, has found over 300 new county records, 10 state records, and 2 new taxa.[25] Tejonflora.org documented floristic survey of the Tejon Ranch, and the new species that are being described from there. A new species of cholla was described in Riverside and Imperial County in 2014[26], and an undescribed new manzanita species were be published in June 2016. *Carex cyrtostachya*, described in 2013, is found in Butte, Yuba, and El Dorado Counties,[27] and it is a CRPR List 1B species. The same is true for the Sierran *Carex xerophila*, published in 2014,[28] and for *Calystegia vanzuukiae* from El Dorado County, published in 2013.[29] According

[24] http://www.dfg.ca.gov/biogeodata/cnddb/cnddb_info.asp
[25] http://sdnhm.org/science/botany/projects/plant-atlas/, accessed 5/26/2016
[26] Baker, M. A., & Cloud-Hughes, M. A. (2014). *Cylindropuntia chuckwallensis* (Cactaceae), a New Species from Riverside and Imperial Counties, California. *Madroño, 61*(2), 231-243.
[27] Zika, P.F., L.P. Janeway, B. L. Wilson and L. Ahart (2013) *Carex cyrtostachya* (Cyperaceae), a new species of sedge endemic to the Sierra Nevada of California. *Journal of the Botanical Research Institute of Texas* 7:25–35.
[28] , Zika, P.F., L. P. Janeway and B. L. Wilson (2014) *Carex xerophila* (Cyperaceae), a New Sedge from the Chaparral of Northern California. *Madroño* 61(3):299-307.
[29] Brummitt, R. K. and Namoff, Sandra M. (2013) *Calystegia vanzuukiae* (Convolvulaceae), a Remarkable New Species From Central California. *Aliso* 31(1)

to an informal, one-week email and Facebook survey of CNPS botanists undertaken in the last week of May 2016, undescribed new species in process of identification were reported to exist in Marin, Tehama, Butte, Shasta, and Santa Barbara counties, and more will certainly be found as large, old ranches and remote areas are surveyed for development, wind, and solar projects, and probably for the VTP. Experienced botanists know how to deal with this issue. Untrained bureaucrats do not.

The VTP provides no guidance as to the qualifications of project coordinators, nor does it specify when or how long they should spend in the field in each project, going against the advice of both CDFW and CNPS cited in the DEIR. In any case, CNPS always strongly suggests that surveys be left to qualified botanists with experience in the local area of any proposed project, that surveys should take place when the plants are most likely to be alive and identifiable, and that qualified surveyors be allowed adequate time for their work, and not forced to do a cursory, 15 minute visit where they do not get out of the vehicle. **What is to stop Project Coordinators from doing cursory drive-by visits and not even setting foot on project sites? Why should project coordinator surveys be considered acceptable under CEQA? What documentation would the Project Coordinator produce to demonstrate that (s)he had done the task to an acceptable standard?**

3.E. How is Mitigation BIO-2 actually supposed to protect anything? (p.4-212) Critical terms like "type conversion" and "median fire return interval," are left undefined, their determination at the mercy of the Project Coordinator whose qualifications are also left undefined. Moreover, these areas are to be protected for " aesthetics, wildlife, and recreation," not for sensitive plants, lichens, or even the reproduction of species that take decades to reproduce. **Why should mountain bikers desiring new trails be privileged over the continued existence of last-of-their-kind stands?** Additionally, local experts like the California Chaparral Institute, numerous local land management groups, and scientists from both academia and other agencies are left out of the decision loop. **Why are they excluded?** Mitigation BIO-5 is unworkable as written. It should incorporate the analysis of impacts directly into the DEIR, rather than forcing it onto a single Project Coordinator who only needs to make a single site visit. **Why was this not done?**

3.F. Why use the outdated WHR, when so much more useful vegetation information is available? California's flora is immensely complex, but the VTP analysis oversimplifies it by shoehorning all species into trees, shrubs, and herbs. No knowledgeable fire fighter would assume that ponderosa pine (*Pinus ponderosa*) and white fir (*Abies concolor*) have the same fire ecology, but they are all lumped together as "tree-dominated" vegetation (e.g. Table 4.5-6) for the purposes of describing the vegetation in the South Coast.

Considering that CDFW, CNPS, and many other organizations, from cities to federal agencies, have for decades been cooperating to map the vegetation of California and have created two editions of *The Manual of California Vegetation* ("MCV"), it really is sad to see the 1980s Wildlife Habitat Relationships system used by any state agency. The MCV contains a wealth of information on fire ecology. While it is admittedly incomplete, even incomplete it is a far more complete and more useful as a mapping system than is the WHR. **Why not use the MCV as its primary vegetation mapping tool and incorporate the fire ecology information therein into the VTP?**

3.G. How does the VTP avoid becoming a major vector for pests and pathogens? CNPS has found that non-native, pathogenic water molds (genus *Phytophthora*) are spreading through the state and into wildlands through nursery-mediated infection of plants for restoration and landscaping. In 2015 we implemented a policy to try to stem the spread, at least through native plant nurseries.[30] The genus *Phytophthora* may be unfamiliar, but *Phytophthora ramorum* (the cause of Sudden Oak Death) is depressingly familiar, as is the Irish potato blight (*Phytophthora infestans*) that caused so many famines. There are dozens, if not hundreds, of non-native *Phytophthora* species spreading into the state, primarily through the horticultural trade, but increasingly through restoration work. Southern California is so far free of Sudden Oak Death, but it faces beetle invasions from gold-spotted oak borer (*Agrilus coxalis*) and the shot-hole borers mentioned previously. Native pine boring beetles have caused major tree die-offs elsewhere in the state. All of these pests and pathogens can be readily transported by carelessly handled wood, litter, untreated or insufficiently composted green waste, dirty equipment, carelessly grown nursery stock, and so on. Proper sanitation and quarantine are necessary to keep vegetation treatment activities from spreading pests and pathogens throughout the state.

California Department of Resources Recycling and Recovery (CalRecycle) has mandated (AB 1826 Chesbro 2014) that California businesses recycle organic materials, with the goal of diverting all green waste from landfills by 2021.[31] For the VTP, this means that cleared material cannot be landfilled, but must be disposed of elsewhere. If AB 1826 is implemented carelessly by the VTP, it will make the program an "invasives superhighway," as infested material cleared as part of a VTP project is dumped elsewhere, spreading pests, pathogens, and parasites throughout the state.

This is inadequately addressed in the DEIR. Yes, Mitigation BIO-6 is a step in the right direction, but the problem is the statement (p.4-240): "During the planning phase, if the program coordinator determines that there is a significant risk of introducing or spreading an invasive pest (plant or animal), the following standards will be implemented.." This is akin to a medical professionals deciding to institute sanitation procedures only if things look gross. **Why is this optional and not mandatory? If the program coordinator is required to decide when sanitation is necessary, what data will be collected to determine the necessity? How will the decision be made?** This is a non-trivial question, as tests for pathogens are expensive and identification of diseased plants and plant pests requires extensive specialized knowledge. Mandatory sanitation is cheaper and easier to understand and practice.

If BIO-6 is implemented as written, the VTP can be expected to cause substantial individual and cumulative impacts as workers inadvertently spread pests and pathogens on uncleaned equipment and by removing dead, but still infected, plant material and piling it elsewhere. Even leaving some infected material might be problematic, as the pest or pathogen could simply reinfest the area from whatever is left behind.

What are the impacts of implementing BIO-6, or conversely, of not implementing it? How are these impacts to be mitigated, individually and cumulatively? The California Department of Agriculture is in charge of quarantines for agricultural pests and pathogens, while CalRecycle is in charge of greenwaste disposal. Have they been contacted about the VTP? How are their interests affected by the VTP?

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[30] http://www.cnps.org/cnps/archive/phytophthora_policy_2015.pdf
[31] http://www.calrecycle.ca.gov/recycle/commercial/organics/

4. There are serious climate change issues as well. As mentioned in the previous section, CNPS is an advocate of California's native plants and of vegetation dominated by native plants. Because we increasingly have to deal with climate change issues to protect native plants, we now also advocate on climate change issues. In our opinion the treatment of plants and the analysis of climate change impacts in the DEIR have substantial issues. We have a number of issues with the climate change impacts discussion (section 4.6, pp.4-215 to 4-242).

4.A. Is the Regulatory Setting complete? It is not clear why AB 197 (Garcia, 2016) and SB 32 (Pavley, 2016) were excluded from the Regulatory setting**. Is this legislation relevant to the VTP? If it is, how does it change the analysis of section 4.6?**

4.B. How were SCAQMD greenhouse gas thresholds determined to be insignificant? (p. 4-228): "These thresholds were determined to be inappropriate for vegetation management projects in the WUI and wildlands that do not impact the underlying vegetative site productivity." It is unclear that the BoF has the authority to determine the threshold is inappropriate. **Who made the decision and on what grounds? What does "underlying vegetative site productivity" have to do with this decision? Why does it matter, when so many of the treatments involve vegetative type conversion in ways that affect site productivity? Shouldn't the VTP respect the very different air quality requirements for the different California Air Quality Management Districts? Who gave the BoF authority to establish its own greenhouse gas thresholds?**

4.C. Why was the analysis of climate change impacts performed as it was? As we understand it, the relevant details of the climate change impacts analysis are as follows:

- The time frame of analysis is one year. Page 4-230: "[b]ecause the generally accepted time frame for evaluating project emissions is the year of project implementation with emissions generally reported as MT/year, this is also the time frame chosen for this analysis. This will conservatively estimate the VTPs impacts because the benefits of future vegetative growth as the site recovers and the reduction of wildfire risk to the treatment area and surrounding landscape is not taken into account."
- The DEIR assumes that, of the 60,000 acres proposed to be treated every year, 30,000 acres will be burned, 20% mechanical treatments (p. 4-233), 10% manual treatments (p. 4-234), and grazing non-native herbivores and spraying herbicides are only accounted for as trip miles, with herbivore methane emissions based on a sheep herd of 450 animals as the only model (p. 4-234). Thus, only 50% of it burns.
- The conclusion is the VTP causes less than significant impacts to greenhouse gas emissions (p. 4-235): "The VTP would create approximately 298,745 MT/year of CO2e, less than the 510,030 MT/year CO2e emissions created by a similar size wildfire burning."

The conclusion does not follow from the analysis. It is only relevant if the 60,000 acres treated would have burned in the same year they were treated. This is intrinsically unlikely. 60,000 acres treated/22,000,000 acres in the VTP is 0. 261%. According to Figure 1.1-1, ("annual area burned in California 1950-2010", p. 1-3), during the worst wildfire year, 2007, only 1,400,000 acres burned. This is approximately 6.4% of the 23,000,000 acre VTP area. Even during the worst year in recent history, over 93% of the state went unburned.

What are the chances that the area treated by the VTP will burn in the same year, even during a historically bad fire year? If the treatment and the fire are independent events, the chance is much less than one percent.

Still, one might argue that the BoF is very good at predicting where fires will occur and putting their treatments there, so the chance is much higher. This is doubtful, because BoF was unable to predict the Witch, Cedar, Tubbs, Thomas, or many, many other conflagrations, where it would have been immensely beneficial to stop them through prophylactic vegetation treatments. Moreover, the model used to predict fire hazards in the DEIR has been tested as a predictor for home loss during fires, and it contributed <5% to the model that predicted which homes would burn.[32] According to this test, the model used in the DEIR is very bad at predicting where fires will occur in a particular year, as are most models. Fire occurrence has a large random component. Other research in southern California showed that, over 28 years (not one year), 23% of fuel treatments intersected fires in the study area, which means that 77% of fuel treatments went unburned over 28 years in an area notorious for large wildfires.[33] Even in Southern California, a fire treatment area will most likely never be touched by a fire in a generation.

The upshot is that one cannot analyze the greenhouse gas impacts from a vegetation treatment as if the treatment displaces a similarly sized wildfire on the same spot in the same year. Absent truly improbable events, the 60,000 acres treated will not intersect any fire during the year of analysis. Therefore, greenhouse gas emissions from the treatment will not replace or reduce emissions from a fire that would have burned the same area. Instead, they will be emitted in addition to whatever wildfires occur that year.

Clearly, the analysis of climate change impacts is incorrect. **Won't the VTP will cause substantial, unmitigated greenhouse gas emissions? What are the individual and cumulative impact of greenhouse gas emissions from the VTP? How can these impacts be mitigated?**

Moreover, the argument used in this section looks similar to the argument that the California Supreme Court ruled was invalid in the Newhall Ranch ruling.[34] **How can this ruling be incorporated into designing a better analysis of greenhouse gas impacts and mitigations?**

4.D. Why is the basic fire science wrong? In section 4.6.1.2.3.1 "Wildfire versus Prescribed Fire Emissions," the EIR makes the incorrect assumption that carbon dioxide emissions from a wildfire are equivalent to emissions of pollutants caused by inefficient burning. This is incorrect. The basic combustion reaction is that hydrocarbons + $O_2 \rightarrow CO_2$ + water. The more efficiently this reaction runs, the more carbon dioxide is produces. Inefficient combustion produces soot, particulates, and other air pollutants. Decreasing combustion efficiency increases particulate and other pollution but decreases CO_2. Increasing combustion efficiency increases CO_2 production and decreases the amount of particulate and other emissions.. There is no way to escape producing some pollutant by manipulating a fire.

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[32] Syphard, A. D., Keeley, J. E., Massada, A. B., Brennan, T. J., and V. C. Radeloff, V. C. (2012). Housing arrangement and location determine the likelihood of housing loss due to wildfire. PLoS One, 7(3), e33954.
[33] Syphard, A. D., Keeley, J. E., and T. J. Brennan, (2011). Comparing the role of fuel breaks across southern California national forests. Forest Ecology and Management, 261(11), 2038-2048.
[34] *Center for Biological Diversity et al. vs. California Department of Fish and Wildlife and Newhall Land and Farming Company*

As presented in the analysis, highly efficient controlled burns should produce more CO_2 emissions, not less. CO_2 emissions thus cannot be controlled by the same processes that control air pollution from fires. They have to be managed separately, either through not burning or through carbon sequestration. **How can section 4.6.1.2.3.1 and mitigations AIR-1, AIR-2, and FBE-1 be revised to reflect this basic reality?**

4.E. Why are BIO-5 and BIO-6 mentioned in the climate change section (p.4-235)? These two mitigations have nothing to do with carbon sequestration. Indeed, the proposed mitigations are at best marginally relevant to any significant greenhouse gas reduction.

4.F. What is the relationship between the VTP and BOF's responsibility for sequestering carbon? Since BOF has responsibility both for administering the VTP, which appears to be only about removing plants, and for carbon sequestration through planting plants, there needs to be an analysis of the impacts of these two programs on each other. After all, they are in fundamental conflict: fire protection seeks to remove plant matter from the landscape, while sequestration seeks to add it to the landscape. One might expect close coordination between these two programs and how they impact each other, yet there is no mention of it in the DEIR. Specifically, the DEIR needs to analyze:

- **How will the VTP sequester the CO2e it produces (see 4.C. above)?**
- **How will mistakes and accidents increase CO2e emissions from the VTP?**
- **What is the rate or probability of BOF controlled burns escaping control and becoming wildfires?**
- **How are escaped fires controlled, and how much do they burn relative to the proposed size of controlled burns?**
- **How are impacts from escaped burns assessed individually and collectively across the VTP?**
- **What happens if an escaped wildfire impacts a carbon sequestration site?**
- **Can BOF's carbon sequestration programs be used as mitigation for the greenhouse gas impacts generated by the VTP?**

4.G. Why did the DEIR ignore the method suggested in the California Chaparral Institute's response to the Notice of Preparation from October 24, 2015, of accounting over a 100 year period? That method would have avoided at least some of the issues raised in 4.C. and 4.F.

5. Why is the DEIR contain so many misstatements based on scientific papers, reliance on anecdotal evidence, and avoidance of scientific advice? We fully support the California Chaparral Institute's comments in their January 2018 letter ("CCI letter"). Some points we find problematic:

- **Why does the DEIR misquote the science?** The CCI letter contains ample documentation of this, including one scientist denying that his paper said what was implied in the DEIR. We strongly agree with the assessment, and ask the same.
- **Why does the DEIR rely on anecdotal evidence?** This is particularly apparent in the definition of the wildland urban interface (WUI), which is defined in the DEIR solely in reference to how far embers can fly. As noted in the DEIR (p.4-33) and in Appendix A of

the CCI letter, there is no good science to support 1.5 miles as anything other than a polite political fiction, According to the CCI letter and the references therein, the 2009 Bunyip Ridge fire in Australia projected embers 20 km (about 12 miles), while the ongoing Ft. McMurray fire is reported to have projected embers 10 km (about 6 miles). While most fires do not throw embers 12 miles—yet (see climate change)—1.5 miles is too short a distance to guarantee that structures will be protected from flying embers.

Worse, 1.5 miles is a silly number, and this can be demonstrated two ways:

1. First, if VTP projects are supposed to clear 260 acres on average, that is 11,325,600 square feet, and a 1.5 mile wide WUI clearance would be 7,920 feet wide. If one does the math, a 260 acre VTP clearance would create a 1.5 mile wide fire break that is 1,430 feet long, and such a firebreak only works if it is pointed directly at the oncoming fire, and somehow the fire doesn't burn down the uncleared sides of the fire break.
2. Second, the VTP is supposed to clear 60,000 acres per year, and there are 4,523.9 acres in a 1.5 mile-radius circle, as proposed for the WUI. Dividing the two, it looks like the VTP could clear 13.26 WUI circles per year by treating 60,000 acres of VTP (and doing nothing else, no fuel breaks, no ecological restoration). Is protecting 13 structures per year by clearing 1.5 miles around them a useful exercise?

Conversely, there is increasing evidence for the utility of 100 feet of fire clearance around structures, and a 260 acre VTP project could be used to create 21.45 linear miles of fire break 100 feet wide. Choosing 1.5 miles at worst leads to silly projects. **Why use it at all? Why not try approaches that appear more useful based on repeatable tests of evidence?**

***6. Why are there so many contradictions within the DEIR?** It is riddled with them, and they are non-trivial.

- One example, from page E-3: "California's tremendous diversity in vegetation translates into a similar diversity in fuel types, with a resultant variation in fire behavior throughout the state. Considering statewide variations in fire behavior and the need to characterize it at a workable scale for a statewide environmental analysis, the vegetation of California is condensed into three main groups based on the distinct fire behavior each group exhibits. These groups can be classified as tree dominated, grass dominated, and shrub dominated vegetation formations." **Really? Would any firefighter consider white fir and ponderosa pine to have the same fire ecology? How about other pairs of trees and shrubs that have highly divergent fire ecology: sequoia and redwood, lodgepole pine and whitebark pine, chamise and scrub oak?** Clearly, the DEIR failed to usefully simplify the complexity, so we are left concluding that the original statement about diversity in fuel types was correct, and that the analysis failed to account for it at all.
- **The contradictions become more problematic when dealing with biological cumulative impacts.** The DEIR states (p 5-30) that "[o]verall, it is impossible to precisely specify at the scale of the state or region both the biophysical and economic ramifications of interaction between disturbance and biological resources."

  Later it says (p-5-30) that "[c]umulative effects, either negative or positive, can potentially impact individual species of concern, the distribution and sustainability of special habitat elements, wildlife, vegetation structures, and other biological resources. Cumulative effects attributable to these kinds of impact mechanisms are generally most reliably assessed at the scale of the individual project and lands immediately adjacent."

At this point, the DEIR is going against CEQA's intent with PEIRs, as noted in section 2 above. Unfortunately, it goes on to say that (p. 5-31) "[t]he VTP Program EIR cumulative impact analysis, conducted at the scale of the watershed or bioregion, identifies and assesses impact mechanisms that may influence landscape scale biological resource issues such as wildlife movement or habitat capability across broad regions, likelihood of genetic interchange, change in plant community composition as a result of non-native species establishment, or change in species distribution." **Really? Where is this analysis? What were its conclusions?** This part of the DEIR should be thousands of pages long.

Finally (p. 5-33) the DEIR states, "[b]ecause of the amount of acreage eligible but not receiving treatment under the VTP, *the proposed Program would likely result in a less than significant cumulative effect on biological resources at the bioregional scale* [emphasis added]. Wildfires would continue to occur in California, having both negative and positive effects on biological resources and wildlife habitat condition; the magnitude of effect being dependent on a wide suite of physical, biological, and climatic variables."

This is an absurd conclusion. **Does it really say that, because only 60,000 acres is treated each year out of 23,000,000, there is no cumulative impact at all**? **How many California native species, sensitive or not, have global ranges of less than 60,000 acres? An area half the size of Oakland is deliberately burned every year, but that is not significant, because it doesn't burn one-tenth of the state? An equivalent area is herbicided, grazed, and masticated, but that's not significant, because the project doesn't herbicide, graze, and masticate one tenth of the state? Why does the BoF think this makes any sense at all?**

As noted above, it is easy for a single, 260-acre vegetation treatment to wipe out the last stand of old growth chaparral, or to exterminate an endangered plant species, or to remove critical habitat that causes a sensitive species to spiral towards extinction, or to poison a watershed by accidental release of herbicides into a stream, or to transport a pest or pathogen where it never before existed, or to spark a wildfire that burns thousands of acres, because the crew was impatient and started the fire under inappropriate conditions (as in the 2013 San Felipe Fire). All of these are predictable and analyzable. **If such predictable consequences are so hard for the BoF to analyze, why attempt theVTP at all?**

If the DEIR is supposed to be a trustworthy document, to meet its Objective 5, to "[p]rovide a consistent, accountable, and transparent process for vegetation treatment monitoring that is responsive to the objectives, priorities, and concerns of landowners, local, state, federal governments and other stakeholders," then **all internal and external contradictions need to be resolved and removed. How can the VTP be trusted otherwise? What steps will be undertaken to identify and fix the VTP's internal contradictions?**

Alternatives to the current VTP and DEIR

When reading the DEIR, one comes away with the overwhelming impression that this is a document written by people who want stuff done without thinking about the consequences. While we understand that impulse, we do not sympathize with it.

The problem is that the VTP, if implemented as written, would be the single biggest igniter of wildland fires in California, igniting over 100 every year. While all of these are supposed to be controlled burns, the sheer number of ignitions means that some, eventually, will go out of control and cause damage through simple bad luck. Moreover, the VTP will be the single biggest vegetation-clearer in the state. If the biological mitigation measures are implemented as written, VTP employees and contractors will become the single biggest danger to sensitive plants in California. If fire scientists turn out to be right about fire behavior, most VTP activities will have little or no effect on saving lives or property from wildfires, while spending hundreds of millions of dollars.

This is why we care about consequences. The proposed VTP is far too hulking a program to run it impulsively and not analyze its predictable consequences.

We also care because the VTP simply doesn't add up as written. If 23,000,000 acres are "appropriate for treatment" and 60,000 acres are treated every year, it would take almost 383 years for each appropriate acre to get treated once. That's simply pointless. Old growth chaparral can re-establish itself in well under 383 years. The State of California is less than half that age. If the VTP's goal is truly treat WUI areas, that takes repeated visits every few years. In any case, the VTP can only include a small fraction of those 23,000,000 acres. There's no utility in making the program area unworkably large, and there's especially no point in using the scale of acres appropriate for treatment as a way to evaluate alternatives. Most of the land is untreatable anyway.

Then there is the time scale of preparation. The VTP in its current incarnation has been around since 2013, and its roots go back to the 1990s. That is a long time, and a lot of analysis and project design could have been accomplished in that interval. Unfortunately, the DEIR is still focused on trying to avoid that analysis through a combination of pushing it forward to individual projects (contrary to CEQA), hiding motivations, writing that is padded, repetitive, vague, contradictory and obfuscatory, ignoring reality, and simple sloppiness. As a result, the process has wasted years. It is no closer than it was at the beginning to satisfying CEQA or satisfying people, like us, who will have to deal with the VTP's consequences.

Fortunately, there are workable alternatives:

- **Base the VTP's objectives and strategies on science.** We understand that many firefighters distrust science, so we propose that the term "science" be accepted by the VTP preparers as the stuff that turns out to be true whether anyone believes in it or not. The science that underlies the VTP has to be the things that keep firefighters and others from being burned, properties as safe as possible, and keeps the VTP from being an engine for extinction, type conversion of native lands to weed-fields, and a major vector for pests and pathogens. This is the type of science CNPS tries hard to promote, and we hope BOF will promote it too.
- **Create a program that implements those objectives and strategies, again using science.** This is common sense, although some may not see it that way. For example, the DEIR notes that "cost and time to meet environmental review requirements, surveying for and mitigating treatment effects to threatened and endangered species" are major impediments to treating 120,000 acres per year under the existing Vegetation Management Program ("VMP", p. 1-15). Oddly enough, agencies like the National Park Service somehow manage to get programs done within the constraint of environmental review requirements. **Is the problem in the requirements, or within BoF's system for meeting them?** This is an awkward, but critical question. If the problem isn't with the environmental review requirements, then the

VTP is based on a fundamentally wrong assumption, and BoF needs to look at other options for accomplishing its objectives.

- **Front-load the analysis into the PEIR, rather than pushing it down to projects.** This is what CEQA requires. CNPS agrees with the BoF that we need to treat at least some vegetation within 300 feet of homes. We also agree that, in some parts of the state (like some pine forests in the Sierra Nevada), we need more controlled burns. Were the VTP limited to projects that have broad-based support, it would be in place right now. Unfortunately, none of this analysis or consensus seeking went into the VTP or its DEIR. If it had, many of the problems we identify would not exist.
- **Set hard boundaries early.** The math for the VTP simply does not work, and to be blunt, we suspect that a PEIR that realistically tried to analyze the impacts to 23,000,000 acres of any project would be unworkably huge. We are also quite sure that any real VTP will be a small fraction of the size it proposes. We are also quite sure that there are projects that everyone wants done. It should not be as hard as the project proponents think to figure out where projects need to be done and are likely to be done, and to focus the VTP down so that it only works on those areas. Indeed, once the VTP has done that, it might be easier to expand it from a small area using supplemental EIRs, rather than trying to deal with an unworkably huge initial PEIR.
- **Follow CEQA exactly, and get the environmental analysts involved at the design stage, not at the end.** The point is to identify critical problems and avoid them through design changes, rather than solidifying the design and being left with a mess to mitigate. Environmental analysts earn their pay because they are, on an per-hour basis, substantially cheaper than lawyers, and often even cheaper than firefighters. Their best role is helping people spot and avoid predictable problems, rather than in covering up issues. Many southern California developers have learned this advice, and their projects get built without drama. We suggest that state agencies might find it useful as well.
- **Use a multi-year, overlapping planning process for each proposed project.** Since we can expect the climate to get more extreme in coming years (bigger storms, bigger droughts, more rapid switches between the two, longer heatwaves, higher temperatures, and so forth), planning for things like burn days for controlled burns is going to be an exercise in patience. Rather than trying to go from plan to treatment in a single year, we suggest using a multi-year process, like the existing VMP, so that areas can be surveyed by professional biologists, local information and buy-in can be sought, and plans can be made ready for the increasingly rare times when the weather cooperates. Moreover, overlap projects, so that some are being researched while some are being implemented and others are being evaluated afterwards. Rushing will not just make waste, it may ignite conflagrations, injure firefighters, kill people, and send species into extinction. **Is convenience really worth this price?**
- **Consider taking five years to create the next iteration of the VTP.** This is not for our convenience, but because so many things are changing right now:
  1. Fire behavior may be changing with climate change, and new types of wildfires may be emerging.
  2. California is still developing its climate change response by both limiting emissions and increasing sequestration, and it is clear to us that not enough people in California government understand its ramifications yet.
  3. Pests and pathogens are spreading rapidly, and new ones continually enter the state.

- **Rework the VTP so that BoF is a responsible agency, providing resources to projects where other jurisdictions' take the lead for CEQA analysis, rather be the lead agency for treatments. This may sound like a dereliction of duty, but if BOF does not have the resources to perform the VMP adequately, why would it want to be responsible for a poorly-vetted program that will be the single biggest ignition source for fires in California?**

  The lesson of SDG&E is relevant here. After the 2007 Cedar Fire, which SDG&E accidentally started, it settled 2,500 suits for a total of $2,400,000,000.[35] BOF will be held similarly responsible if a VTP prescribed burn goes out of control and causes another Cedar, Witch, Tubbs, or Thomas fire. If BOF does not have adequate resources to pursue the VMP now, it is difficult to imagine how much its resources and prestige will be damaged by a VTP-prescribed fire gone catastrophically wrong.

  There are other factors at stake. Moody's Analytics, which rates municipal bonds, is starting to assess the credit risks to cities and state that are affected by climate change, and among those risks in the Southwest are wildfires.[36] California cities, counties, and the state itself could all see their bond ratings slashed after inept handling of wildfire risks, especially when the damage is self-inflicted by VTP-authorized projects, and responsibility is laid at the feet of BOF.

How much damage can the BoF do by rushing to implement a vague, sloppy program at this time? Our strong sense in reading multiple versions of the DEIR is that the people who wrote it really did not understand most of the issues they wrote about, nor did they get help from some really good in-house researchers, such as the fire researchers in BOF. We believe that the BoF needs to take several years at least to understand and embrace what the 21st Century has in store for it, rather than rushing to implement a bigger version of the 1980s-era VMP. We only wish that this process had started a decade ago, rather than now.

Unfortunately, none of these suggestions change our basic opinion, which is that this DEIR needs to be thoroughly rewritten and recirculated, and that the VTP as written is unworkable. Please take the time to do it right.

Please keep us informed of all future developments with this and related projects. Thank you for consideration of our comments and questions. Please keep us informed of all developments at conservation@cnpssd.org and franklandis03@yahoo.com.

Sincerely,

Frank Landis, PhD
Conservation Chair
CNPS San Diego

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[35] http://www.kpbs.org/news/2017/nov/30/regulators-vote-sdge-not-ratepayers-pay-2007-san-d/, accessed 1/1/2017.
[36] https://www.npr.org/2017/12/01/567843604/credit-rating-agency-issues-warning-on-climate-change-to-cities, accessed 1/1/2017.

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May 31, 2016

Edith Hannigan, Board Analyst
Board of Forestry and Fire Protection
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VegetationTreatment@bof.ca.gov

Re: Draft Programmatic Environmental Impact Report For The Vegetation Treatment Program of the California State Board of Forestry and Fire Protection

Dear Ms Hannigan and Members of the Board:

We appreciate the opportunity to comment on the Draft Programmatic Environmental Impact Report for The Vegetation Treatment Program Of the California State Board of Forestry and Fire Protection ("DEIR," "VTP," "BoF").

The California Native Plant Society (CNPS) works to protect California's native plant heritage and preserve it for future generations. CNPS promotes sound plant science and action against climate change as the backbone of effective natural areas protection. We work closely with decision-makers, scientists, and planners to advocate for well informed and environmentally friendly policies, regulations, and land management practices. CNPS support appropriate land management practices to sustain California native plant species, both on properties dedicated to that purpose (e.g. State, Federal, County, or local and private conservation parks or preserves) and other properties, private and public, where these species occur, especially where their continued survival helps provide a genetic buffer for their survival, should catastrophic events destroy them in protected areas.

We strongly agree that fire and invasive species are critical issues that must be actively managed. However, **westrongly recommends that this DEIR NOT be certified, due to lack of substantial evidence to support contentions and conclusions made throughout the document, due to substantial procedural lapses and irregularities, as well as the other issues we list below. We further contend that it cannot serve the purpose it was apparently designed for, and propose possibly more workable solutions for the Board's consideration.**

Based on the DEIR, we have many questions, including:

7. How the DEIR deals with its procedural lapses and irregularities
8. How the DEIR deals with native plants issues
9. How the DEIR deals with climate change
10. Why the DEIR contains so many misstatements based on scientific papers, reliance on anecdotal evidence, and avoidance of scientific advice?
11. Why the DEIR contains so many internal contradictions.

The following groups of questions are based on the concerns summarized above. We formally request that the BoF fully consider and respond to our questions in an effort to improve the Draft DEIR by clarifying, among other things, its purpose, rationale, and management structure.

We note that this letter contains similar material to the San Diego CNPS (CNPSSD) comment letter on a previous version of the DEIR, sent February 15, 2013. That letter also included a formal request to the Board of Forestry to respond to the questions that letter raised. The BoF never responded to that request, which is unfortunate, as many of those questions were specifically designed to help the BoF write a better DEIR. As a result, the current Report repeats many of its predecessors' mistakes, and the same criticisms still apply.

Background

California is inarguably the most complicated state in the US, whether the complexity is biodiversity (California is a global biodiversity hotspot[37]), socio-political, geographic, geologic, or in the massive infrastructure of aqueducts, power grids, farms, forests, and cities that allow over 38,000,000 people to live here. Worse, climate change is affecting everything, from water availability to fire behavior. Writing a programmatic EIR (PEIR) is about analyzing the predictable, cumulative impacts of a program. Writing a PEIR for a program that proposes a diverse set activities across almost one-fifth of California is a truly titanic undertaking that the writers of the DEIR did not really engage in.

The main body of the DEIR is only 759 pages long, and it contains multiple repetitions. To show why this is a problem, compare it to the natural resources management plan and Mitigated Negative Declaration for 1,092 acres of urban park in San Diego, which was 159 pages long[38]. The DEIR, supposedly an analysis of a long-term program that proposes to treat up to 22,000,000 acres over decades, is barely five times longer than a routine local management document that deals with a few miles of trail. There is no way the DEIR can provide adequate analysis in so short a length, and it does not. The scale of the DEIR far too small for the VTP. Unfortunately, the issues do with the DEIR do not stop at its short length.

1. With respect to CEQA, we noticed numerous procedural lapses and irregularities:

1.A. Why is the DEIR written with such lack of detail? It certainly is not because it is a PEIR. According to CEQA, all EIRs, whether programmatic or not, need to contain a detailed analysis, and PEIRs are supposed to analyze impacts " as specifically and comprehensively as possible."[39] Indeed, the role of a PEIR is two-fold: it includes “more exhaustive consideration" of impacts, mitigation, and alternatives than an individual project EIR could include, and it

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[37] Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B., and J. Kent. (2000). Biodiversity hotspots for conservation priorities. *Nature*, 403(6772), 853-858.

[38] City of San Diego (2015). Carmel Mountain/Del Mar Mesa Natural Resources Management Plan and Trail System..

[39] CEQA Guidelines, 15168(a), (c)(5)

considers cumulative impacts[40]. Projects are supposed to "tier" off the PEIR, depending on and supplementing its analysis only, not doing the work that it was supposed to contain.
CEQA further notes that "[t]iering does not excuse the lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis to a later tier EIR or negative declaration."[41] Also, "[d]esignating an EIR as a program EIR also does not by itself decrease the level of analysis otherwise required in the EIR."[42] Programmatic EIRs must contain "extensive, detailed evaluations" of a plan's impacts on the existing environment. The DEIR's reliance on future, project-level environmental review is contrary to CEQA's policy of favoring early identification of environmental impacts. CEQA does not allow agencies to defer analysis of a plan's impacts to some future EIR for specific projects contemplated by that plan. Finally, as we understand it (we are not lawyers) the courts have ruled that environmental review must take place before project approval, and specifically that, in an programmatic EIR, tiering" is not a device for deferring identification of significant environmental impacts that the adoption of a specific plan can be expected to cause."[43]
Given that the DEIR does exactly the opposite of what CEQA policy states and courts support, why was it written that way? Would it not have been better to follow CEQA and relevant case law?

1.B. What exactly is the Proposed VTP, and what are its boundaries in space and time?
Here is what we do know about the VTP, from the DEIR:

- (p. E-6) "The total land area where the vegetation formation assemblages are appropriate for a ...treatment is approximately 22 million acres, or 71 percent of the SRA [State Responsibility Area]."
- Maps in Figure ES-1 (pE-7) make it clear that many treatment acres are outside the SRA. Other maps (e.g. Figure A1-1, p. A-2) show that some of the "treatable acres in the VTP" are either in Local Responsibility Areas or Federal Responsibility Areas, although all maps in the DEIR are at too small a scale to see boundaries, a fact emphasized by the "blowup" sections on some to show the presence of undescribed and unanalyzed details (e.g. 2.2-9, p. 2-20).
- The VTP seeks to treat 60,000 acres per year, with 231 projects per year averaging 260 acres each (p. 2-35). This is huge (60,000 acres is 93.75 square miles, roughly the size of Oakland and Berkeley combined), but it is not clear if it is appropriate. For example, if every one of the 22,000,000 acres " appropriate for a treatment" were to be treated just once, it would take almost 367 years (22,000,000 acres/60,000 acres per year), which is clearly inadequate for any kind of sustained vegetation management. Clearly the VTP actually intends to treat a small subset of land " appropriate for a treatment, "but the actual parcels to be treated are not discussed, mapped, or analyzed, and may not be determined yet.
- The VTP breaks California down into nine ecoregions; it proposes three types of fuel management treatments, at the Wildand Urban Interface (WUI), on fire breaks, and as ecological restoration; it proposes a menu of treatment activities including controlled burns (supposedly half of the treatments), grazing with non-native herbivores, mechanical clearance, clearance by hand, and herbicide application. Just a simple combinatorial analysis, 9 ecoregions times 3 management treatments times 5 treatment activities, leads to

[40] CEQA Guidelines, 15168(b)(1)-(2).
[41] CEQA Guidelines 15152(b)
[42] CEQA Guidelines 15160.
[43] Stanislaus Natural Heritage Project v. County of Stanislaus (1996)

135 different scenarios, even without adding further very necessary complexities. Analyzing the impacts of over one hundred scenarios is an enormous task, one that is impossible in a document that is only 759 pages long. Indeed, the DEIR does not grapple with this full complexity at all, so we have no idea exactly what will happen when, where, why, or how often.

There is a problem with this approach: as we understand it, the courts have ruled that "[a]n accurate, stable and finite project description" in an EIR is necessary to analyze its impacts, and a "truncated project concept" violates CEQA.[44] While exhaustive detail is unnecessary, CEQA mandates that EIR project descriptions should be sufficiently detailed, and sufficiently accurate, to permit informed decision making.[45]

Given that the DEIR does exactly the opposite of what CEQA policy states and courts support, why was the DEIR written that way? Would it not have been better to follow CEQA and relevant case law? What exactly is the VTP?

1.C. Where is the program map, and what parcels are subject to the VTP? According to CEQA[46]: "The precise location and boundaries of the proposed project shall be shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map." While numerous maps are supplied, they are labeled as responsibility areas or as modeled areas that might be treated. We could find no hard-line map.

- How can local impacts be analyzed if the time and place affected by any program is not specified? How can cumulative impacts be analyzed if there is insufficient local data on where and when the program occurs, and what is affected?
- How can landowners determine whether they or neighboring properties are susceptible to the VTP, in case they want to take action?
- Why does the DEIR show maps that are insufficiently detailed for any landowner to determine whether they are subject to the proposed program or not?

Environmental impacts must, by definition, have an environment in which to occur. Phrasing the acreage as " appropriate for treatment" is insufficient. If a parcel is considered eligible for the Program, then the Program has a boundary, and all parcels within that boundary must shown on maps, to circumscribe the environment impacted by the Program.

There is a second map issue, which can be seen clearly in Figure ES-1, but which is repeated throughout the DEIR: **Why do the maps of the State Responsibility Area, Treatable Vegetation Formations, and Treatable Acres in the VTP not agree? It appears that there are quite a few acres (fire breaks?) that occur in the deserts and other areas outside the State Responsibility Area. Is CALFIRE responsible for these?**

- **Why is vegetation that is outside the State Responsibility Area discussed but not mapped?**
- **Why are there fuel breaks that appear to be in the Federal Responsibility Area (compare Figure A-1.1, page A-2, and A-1.3, page A-5)? If these areas are under Federal Responsibility should the DEIR not also be an environmental impact statement, and EIR/S?**

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[44] Sacramento Old City Association. v. City Council (1991), Rio Vista Farm Bureau v. County. of Solano (1992)
[45] CEQA Guidelines § 15124
[46] ibid.

1.D How does the DEIR deal with thresholds of significance? CEQA presumes that agencies will use thresholds of significance as a tool for determining the significance of a project's possible impacts. [47] What are the thresholds of significance for biological impacts in the DEIR? We could not find them, and this causes problems throughout the document. For example, the DEIR states that the VTP would have a significant impact if it contributes to the substantial, long-term decline in the viability of any native species (p. 4-115). Unfortunately, there is no threshold to determine what substantial, long-term, and viability mean in order to determine when a significant impact has occurred. Without thresholds, there is no mechanism for determining whether impacts have been mitigated to below the level of significance, and thus the analysis is incomplete.

1.E. Why does the DEIR defer analysis of so many impacts and creation of mitigations until after it is approved? CEQA requires EIRs to be detailed, complete, and contain a sufficient degree of analysis to let the public and decision-makers understand the proposed project's adverse environmental impacts, so that corrections can be made and an informed decision can ultimately be undertaken.[48] As we understand it, the courts repeatedly have ruled against deferring analysis until after the EIR is approved.[49] Similarly, EIRs are generally not allowed to defer evaluation of mitigations.[50] Why does the VTP DEIR resort to these tactics so often?

1.F. Why does the DEIR inadequately analyze so many impacts from the VTP? Under CEQA, "[a]n EIR shall identify and focus on the significant effects of the proposed project."[51] As we understand it, the courts have ruled against merely incorporating the conclusions of an analysis, and that an EIR must contain facts and analysis as well.[52] We deal with one glaring botanical example of this problem below in 2.A., but it is ubiquitous throughout the DEIR. Why does the DEIR resort to inadequate analysis so often?

1.G. Why does the DEIR contain so many mitigation measures that are vague, unenforceable, and inadequate? CEQA requires all EIRs to not only identify significant impacts but also to find ways to mitigate them below the level of significance as much as possible.[53] Furthermore, the mitigation measures must be enforceable.[54] As we understand it, the courts have ruled against mitigation measures that are vague and unenforceable. [55] Why does the VTP DEIR resort to these tactics so often? Where is the detailed, complete, and sufficient analysis in the DEIR to allow anyone to conclude that the VTP will not have significant individual and cumulative impacts?

1. H. Why are the Objectives so badly defined?

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[47] CEQA Guidelines § 15064(a), 15064.7
[48] CEQA Guidelines § 15151.
[49] No Oil, Inc. v. City of Los Angeles (1974), Sundstrom v. County of Mendocino (1988), Gentry v. City of Murrieta (1995).
[50] CEQA Guidelines § 15126.4(a)(1)(B)
[51] CEQA Guidelines § 15126.2(a)
[52] Citizens of Goleta Valley v. Board of Supervisors (1990)
[53] Public Resources Code, §§ 21002, 21061.1; CEQA Guidelines §§ 15021(b), 15364
[54] Public Resources Code, § 21002; CEQA Guidelines §§ 15002(a)(3), 15126.4(a)(2)
[55] Anderson First Coalition v. City of Anderson (2005)

- **Aren't Objectives 2, 3, and 4 subsets of Objective 1?** Objective 1, "Modify wildland fire behavior to help reduce losses to life, property, and natural resources,"(p. E-3) includes objectives 2-4 so one can argue that 2-4 are redundant. These objectives perhaps refer instead to the three treatment activities respectively deal with fire in the wildland urban interface ("WUI"), fire breaks, and "ecological restoration," although not only are they not named as such. In any case, they are, at best, sub-goals of #1. Why separate them out?
- **Can the VTP accomplish Objectives 2 and 3?** Objective 2 (p. E-2) states: "[i]ncrease the opportunities for altering or influencing the size, intensity, shape, and direction of wildfires within the wildland urban interface," and Objective 3 (p. E-3) states: "Reduce the potential size and total associated suppression costs of individual wildland fires by altering the continuity of wildland fuels." If the average VTP project is 260 acres, less the half a square mile, and embers can travel up to 12 miles (see section 4 below), then are VTP projects at the right scale to make any meaningful difference? The VTP needs to make clear what kinds of fires it envisions protecting against, because these two objectives seem to be scaled too small to control the wind-driven fires that cause a vast majority of destruction in California.
- **What is meant by Objective 4?** Objective 4 (p. E-3) is to "[r]educe the potential for high severity fires by restoring and maintaining a range of native, fire-adapted plant communities through periodic low intensity treatments within the appropriate vegetation types." While this might make sense in, for instance, ponderosa pine forests that have become overgrown with saplings due to fire suppression, it appears that the majority of controlled burns are aimed at shrub-dominated vegetation, e.g. chaparral (p. 4-427). As both the California Chaparral Institute and CNPSSD have argued repeatedly, there is too much fire in chaparral, especially in southern California. The simplest way to improve this fire return interval is to not burn in chaparral for the next century or so. Both Objective 4 and the VTP itself need to become consistent and transparent about what they intend to burn, where, and why. CNPSSD does not disagree that some plant communities, such as some ponderosa pine stands in the Sierra Nevada, could benefit from controlled burns. These need to be called out so that the impacts of treating them can be analyzed. Why were they not identified in this DEIR?

1.I. Why does the Alternatives Analysis depend so much on acres treated? One major issue here is that treating 60,000 acres per year is not one of the official objectives of the VTP, so it should not be used to judge alternatives. Clearly, however, it is the main *unofficial* objective. Nonetheless, the goal of 60,000 acres per year with unlimited potential for expansion to 22,000,000 acres is problematic, because it means that areas get treated once per century or once per 366 years, as noted above. Things like fire breaks only work if they are cleared regularly, ideally every year. However, limiting the VTP to acres that could be cleared every year would limit the program to something as small as 60,000 high-value acres (so that each acre could be cleared once every year). Any realistic VTP should be something in between 300,000 and 22,000,000 acres (probably less than a few million acres, as even projects in a 1,200,000 acre program would only be visited once every 20 years). That requires a much reduced project, so that some sites are visited frequently, some once. Regardless, any argument that downgrades alternatives because they limit the acreage treated is doomed by logistics and math. It is a criterion based on greed rather than analysis or logistics. Why use it?
We strongly suggest that the BoF consider how much they truly need to work on, and make that the area of the VTP. We also strongly suggest that, if acreage treated is so important, that the

VTP make that the first official objective, and stop trying to hide this fundamental motivation for the VTP.

2. With respect to native plant issues, we noticed many problems. The treatment of native plants issues is riddled with issues, starting with the trivial (CNPS is repeatedly referenced in the DEIR, but the acronym is not spelled out nor included in the front glossary). In addition, the plural of plant is not vegetation, and vegetation has different issues than plants, despite the attempt of the DEIR to bundle them together), and going rapidly to the seriously non-functional.

We have the following questions about how native plant issues were treated in the DEIR:

2. A. Why were Standard Project Requirements (SPRs) BIO-1, BIO-2, and BIO-3 not carried out in preparation of the DEIR itself, rather than as a task to be carried out in subsequent analyses? ***The entire botanical analysis*** is the following statement: "[i]mpacts to botanical resources were analyzed by examining special status plants and communities listed in the California Natural Diversity Database (CNDDB) for each bioregion."**How does this meet CEQA Guideline 15125(c): "The EIR must demonstrate that the significant environmental impacts of the proposed project were adequately investigated and discussed and it must permit the significant effects of the project to be considered in the full environmental context[?]"**

Note that CEQA requires this analysis in all EIRs. It is not option, nor, as noted above, is it allowable to forego this impacts analysis until after the VTP DEIR is approved.

- Where is the detailed evidence that this analysis was ever done?
- What were the detailed results of this analysis?
- What can we check to determine that this analysis was done properly, so that we can help fix any deficiencies?
- What were the impacts to populations of sensitive species? How many will be lost? How many will need to be transplanted or replanted? How many new populations were discovered?
- How are the impacts to each species to be mitigated below significance?
- What are the cumulative impacts?
- How are they to be mitigated below the level of significance?
- Are there unavoidable impacts? Where is the declaration of over-riding consideration for them?
- How did impacts to sensitive plants and the mitigation thereof influence the design of the VTP?

The current version of the DEIR has the dubious distinction of containing even less information about California's native plants than did its predecessors. Note that not all of California's plant species are affected by the VTP. Insular species like the extremely rare *Cercocarpus traskiae* will never be subject to vegetation treatment. Nor will a wide selection of beach dune plants (e.g. *Acmispon prostratus*, *Phacelia stellaris*, and *Nemacaulis denudata* var. *denudata*) that mostly occur on urban dunes. The fundamental point is that the Program does not affect all listed plants, it affects a subset of them. Why was this subset not identified?

2.B. Why is the biological description of the project area so incomplete? 4.2.1.2, the Biological Setting and Concerns, is a description of the "nine ecoregions" used in the analysis

(p.4-85-4-109) is not useful for environmental analysis. It does not describe what is important, it does not describe what is impacted, it does not use scientific names, but it does lump together plants with radically different fire ecologies and pretends they are equivalent. Indeed, it does not describe concerns or in any way highlight which bits of information are actually important. (For example, the Sierra Nevada is described as having "bold topography," rather than by the elevation range of any vegetation type or species mentioned).
According to CEQA,"[a]n EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published."[56] This includes the plants and animals within the project's boundary. Section 4.2.1.2. fails to do this. To pick one concern that is left undescribed, we learn on page 4-427, in the climate change section, that the majority of the 30,000 acres subject to controlled burns will occur in "shrub dominated vegetation." Despite the presence of BIO-5, it appears that the VTP specifically targets chaparral, but this is not mentioned in the Biological Setting and Concerns. Why is it not mentioned?
Worse, the DEIR contradicts itself on the utility of ecoregions. For example, it notes (p. 4-79) that "evaluating impacts at the bio-regional scale allows for a reasonable analysis of the foreseeable impacts without being neither so large an area as to dilute the impacts or too small an area to magnify the impacts," but later (p. 4-121) states that “[i]n order for an effect to be considered significant at the bioregional level, the species in question would have to be impacted enough to meet one of the Significance Criteria stated above. The amount of habitat that would have to be adversely modified to cause a substantial adverse effect has not been scientifically determined for most species and is likely unknowable until the threshold has been crossed and the species is in jeopardy." In other words, despite the importance of threshold analysis in CEQA as noted above, this document appears to regard threshold impacts as unknowable, at least at the bio-regional scale. Why was this scale used? It is also very unclear what the "Significance Criteria stated above" are, since this is the first use of the term "Significance Criteria" and other uses refer to over issues. What are they?

2.C. Why is SPR BIO-1 thought to be sufficient or workable? To us, SPR BIO-1 is unworkable, as it does not cover sensitive species on the CRPR list (note that the CNPS list has been the California Rare Plants Rank list for many years now), nor does it cover species protected by cities and counties. As written, this SPR fails to cover hundreds of sensitive plants. Moreover, the DEIR misses the fact that List 2 was split to List 2A and List 2B, to parallel Lists 1A and 1B. This SPR must be rewritten to conform to current practice and terminology, as it is obsolete as written. At the very least, the definition should follow CDFW current practice. We also note that counties like San Diego and Ventura have their own lists, which largely, but not entirely, match with those maintained by the state. The VTP should honor local lists and local practice that reflect local expertise and local needs.

2.D. Why does SPR BIO-2 designate the Project Coordinator to conduct a field review of any proposed project? What qualifications demonstrate that the Project Coordinator is competent to perform field identifications? Where is this competency requirement specified in the VTP? How will qualifications be assessed? The problem is that, unless the Project Coordinator is a qualified botanist, (s)he will lack the ability to determine how accurate the CNDDB or any other database is, will not know when or how to survey (the excellent

[56] CEQA guideline § 15125

guidance from CDFW and CNPS is inadequate without real training), will not know how to collect specimens, nor where to send them in problematic cases, nor how to deal with any truly complex issues.

Another problem here is that all databases are insufficient. For example, the CNDDB states, "[W]e cannot and do not portray the CNDDB as an exhaustive and comprehensive inventory of all rare species and natural communities statewide. Field verification for the presence or absence of sensitive species will always be an important obligation of our customers."[57] Trained botanists know this. Untrained bureaucrats do not.

It is routine to find new populations of sensitive species or even new species in areas (such as large, old ranches) that were never or rarely surveyed. The author of this letter (Dr. Landis) found what eventually turned out to be a new species of *Eriastrum* in 2007, on a wind farm project in the Tehachapis. The San Diego Plant Atlas, since 2003, has found over 300 new county records, 10 state records, and 2 new taxa.[58] Tejonflora.org documents the ongoing floristic survey of the Tejon Ranch, and the new species that are being described from there. A new species of cholla was described in Riverside and Imperial County in 2014[59], and an undescribed new manzanita species will be published in June. *Carex cyrtostachya*, described in 2013, is found in Butte, Yuba, and El Dorado Counties,[60] and it is a CRPR List 1B species that may not yet be in CNDDB. The same is true for the Sierran *Carex xerophila*, published in 2014,[61] and for *Calystegia vanzuukiae* from El Dorado County, published in 2013.[62] According to an informal, one-week email and Facebook survey of CNPS botanists undertaken in the last week of May 2016, undescribed new species in process of identification were reported to exist in Marin, Tehama, Butte, Shasta, and Santa Barbara counties, and more will certainly be found as large, old ranches and remote areas are surveyed for development, wind, and solar projects, and probably for the VTP. Experienced botanists know how to deal with this issue. Untrained bureaucrats do not.

The VTP provides no guidance as to the qualifications of Project Coordinators, nor does it specify when or how long they should spend in the field in each project, going against the advice of both CDFW and CNPS cited in the DEIR. In any case, CNPS always strongly suggests that surveys be left to qualified botanists with experience in the local area of any proposed project, that surveys should take place when the plants are most likely to be alive and identifiable, and that qualified surveyors be allowed adequate time for their work, and not forced to do a cursory, 15 minute visit where they do not get out of the vehicle. What is to stop Project Coordinators from doing cursory drive-by visits and not even setting foot on project sites? Why should drive-by surveys be considered acceptable under CEQA?

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[57] http://www.dfg.ca.gov/biogeodata/cnddb/cnddb_info.asp

[58] http://sdnhm.org/science/botany/projects/plant-atlas/, accessed 5/26/2016

[59] Baker, M. A., & Cloud-Hughes, M. A. (2014). *Cylindropuntia chuckwallensis* (Cactaceae), a New Species from Riverside and Imperial Counties, California. *Madroño, 61*(2), 231-243.

[60] Zika, P.F., L.P. Janeway, B. L. Wilson and L. Ahart (2013) *Carex cyrtostachya* (Cyperaceae), a new species of sedge endemic to the Sierra Nevada of California. *Journal of the Botanical Research Institute of Texas* 7:25–35.

[61] , Zika, P.F., L. P. Janeway and B. L. Wilson (2014) *Carex xerophila* (Cyperaceae), a New Sedge from the Chaparral of Northern California. *Madroño* 61(3):299-307.

[62] Brummitt, R. K. and Namoff, Sandra M. (2013) *Calystegia vanzuukiae* (Convolvulaceae), a Remarkable New Species From Central California. *Aliso* 31(1)

2.E. How is SPR BIO-5 actually supposed to protect anything? Critical terms like "type conversion," "median fire return interval," and " old growth" are left undefined, their determination at the mercy of the Project Coordinator whose qualifications are also left undefined. Moreover, these areas are to be protected for " aesthetics, wildlife, and recreation," not for sensitive plants, lichens, or even the reproduction of species that take decades to reproduce. Why should mountain bikers desiring new trails be privileged over the continued existence of last-of-their-kind stands? Additionally, local experts like the California Chaparral Institute, numerous local land management groups, and scientists from both academia and other agencies are left out of the decision loop. Why are they excluded? Finally, this SPR needs to be extended to all old growth vegetation throughout the state, because there is very little left of any of it. As the author (Dr. Landis) is finding, working in an urban stand of old growth chaparral, old growth is often home to other poorly known or even undescribed species. SPR BIO-5 is unworkable as written. It should incorporate the analysis of impacts to old growth stands directly into the DEIR, rather than forcing it onto a single Project Coordinator who only needs to make a single site visit. Why was this not done?

2.F. Why use the outdated WHR, when so much more useful vegetation information is available? California's flora is immensely complex, but the VTP analysis oversimplifies it by shoehorning all species into trees, shrubs, and herbs. No knowledgeable fire fighter would assume that ponderosa pine (*Pinus ponderosa*) and white fir (*Abies concolor*) have the same fire ecology, but they are all lumped together as "tree-dominated" vegetation (e.g. Table 4.2-14) for the purposes of describing the vegetation in the Sierra Nevada.
Considering that CDFW and CNPS have for decades been cooperating to map the vegetation of California and have created two editions of *The Manual of California Vegetation* ("MCV"), it really is sad to see the 1980s Wildlife Habitat Relationships system used by any state agency. The MCV contains a wealth of information on fire ecology. While it is admittedly incomplete, even incomplete it is a far more complete and more useful as a mapping system than is the WHR. We strongly recommend that the BoF use the MCV as its primary vegetation mapping tool and incorporate the fire ecology information therein into the analysis of programs like the VTP.

2.G. How does the VTP avoid becoming a major vector for pests and pathogens? CNPS has found that non-native, pathogenic water molds (genus *Phytophthora*) are spreading through the state and into wildlands through nursery-mediated infection of plants for restoration and landscaping. In 2015 we implemented a policy to try to stem the spread, at least through native plant nurseries.[63] The genus *Phytophthora* may be unfamiliar, but *Phytophthora ramorum* (the cause of Sudden Oak Death) is depressingly familiar, as is the Irish potato blight (*Phytophthora infestans*) that caused so many famines. Southern California is so far free of Sudden Oak Death, but it faces beetle invasions, from gold-spotted oak borer and polyphagous shot-hole borers. Native pine boring beetles have caused major tree die-offs elsewhere in the state. All of these pests and pathogens can be readily transported by carelessly handled wood, litter, untreated or insufficiently composted green waste, uncleaned equipment, carelessly grown nursery stock, and so on. Proper sanitation and quarantine are necessary to keep vegetation treatment activities from spreading pests and pathogens throughout the state.

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[63] http://www.cnps.org/cnps/archive/phytophthora_policy_2015.pdf

Unfortunately, this was not addressed in the DEIR. As a result, the VTP can be expected to cause substantial individual and cumulative impacts as workers inadvertently spread pests and pathogens on uncleaned equipment and by removing dead, but still infected, plant material. Even leaving some infected material might be problematic, as the pest or pathogen could simply reinfest the area from whatever is left behind.
What is the VTP going to do about proper sanitation and quarantine? What are the impacts of doing these, or conversely, of not doing them? How are these impacts to be mitigated, individually and cumulatively?

3. There are serious climate change issues as well. As mentioned in the previous section, CNPS is a champion of California's native plants and of vegetation dominated by native plants. Because we were successful co-plaintiffs in the recent case *Center for Biological Diversity et al. vs. California Department of Fish and Wildlife and Newhall Land and Farming Company* ("Newhall Ranch ruling"), and because we are increasingly having to deal with climate change issues to protect native plants, we now also advocate on climate change issues. In our opinion the treatment of plants and the analysis of climate change impacts in the DEIR have substantial issues. We have a number of issues with the climate change impacts discussion (section 4.14, pp.4-408 to 4-434).

3.A. Why was the analysis of climate change impacts performed as it was? As we understand it, the relevant details of the climate change impacts analysis are as follows:

- The time frame of analysis is one year. Page 4-424: "Because the generally accepted time frame for evaluating project emissions is the year of project implementation with emissions generally reported as MT/year, this is also the time frame chosen for this analysis. This will conservatively estimate the VTPs impacts because the benefits of future vegetative growth as the site recovers and the reduction of wildfire risk to the treatment area and surrounding landscape is not taken into account."
- The DEIR assumes that, of the 60,000 acres proposed to be treated every year, 30,000 acres will be burned, 20% mechanical treatments (p.4-427), 10% manual treatments (p.4-428), and grazing non-native herbivores and spraying herbicides are only accounted for as trip miles, with herbivore methane emissions based on a sheep herd of 450 animals as the only model (p.4-428). Thus, only 50% of it burns.
- Conclusion: there are less than significant impacts to greenhouse gas emissions (p. 4-429): "The VTP would create approximately 298,745 MT/year of CO2e, less than the 510,030 MT/year CO2e emissions created by a similar size wildfire burning."

The conclusion does not follow from the analysis. It is only relevant if the 60,000 acres treated would have burned in the same year it was treated. This is intrinsically unlikely. 60,000 acres treated/22,000,000 acres in the VTP is 0. 272%. According to Figure 1.1-1, (" annual area burned in California 1950-2010", p. 1-3), during the worst wildfire year, 2007, only 1,400,000 acres burned. This is approximately 6.3% of the 22,000,000 acre VTP area. Even during the worst year in recent history, over 93% of the state went unburned.
What are the chances that the area treated by the VTP will burn in the same year, even during a historically bad fire year? If the treatment and the fire are independent events, the chance is much less than one percent. Still, one might argue that the BoF is very good at predicting where fires will occur and putting their treatments there, so the chance is much higher. Unfortunately

for this argument, the model used to predict fire hazards in the DEIR has been tested as a predictor for home loss during fires, and it contributed <5% to the model that predicted which homes would burn.[64] According to this test the model used in the DEIR is very bad at predicting where fires will occur in a particular year, as are most models. Fire occurrence has a large random component. Other research in southern California showed that, over 28 years (not one year), 23% of fuel treatments intersected fires in the study area, which means that 77% of fuel treatments went unburned over 28 years, in an area notorious for large wildfires.[65] Even in Southern California, a fire treatment area will most likely never be touched by a fire in a generation.

The upshot is that one cannot analyze the greenhouse gas impacts from a vegetation treatment as if the treatment displaces a similarly sized wildfire on the same spot in the same year. Absent truly improbable events, the treatment will not intersect any fire during the year of analysis. Therefore, greenhouse gas emissions from the treatment will not replace or reduce emissions from a fire that would have burned the same area. Instead, they will be emitted in addition to whatever wildfires occur that year.

Clearly, the analysis of climate change impacts is incorrect, and the VTP will cause substantial, unmitigated greenhouse gas emissions. This section needs to be redone, the individual and cumulative impact of greenhouse gas emissions from the VTP need to be analyzed, and real mitigation measures need to be proposed.

Moreover, the argument used in this section looks similar to the argument that the California Supreme Court ruled was invalid in the Newhall Ranch ruling. We therefore strongly suggest that BoF read that ruling, and incorporate it into designing a better analysis of greenhouse gas impacts and mitigations.

3.B. Why is the basic fire science wrong? In section 4.14.1.2.3.1 "Wildfire versus Prescribed Fire Emissions," the EIR makes the incorrect assumption that carbon dioxide emissions from a wildfire are equivalent to emissions of pollutants caused by inefficient burning. This is incorrect. The basic combustion reaction is that hydrocarbons + oxygen → carbon dioxide + water. The more efficiently this reaction runs, the more carbon dioxide is produces. Inefficient combustion produces soot, particulates, and other air pollutants. Decreasing combustion efficiency increases particulate and other pollution. Increasing combustion efficiency increases carbon dioxide production. There is no way to escape producing some pollutant by manipulating an fire.

As presented in the analysis, highly efficient controlled burns should produce more carbon dioxide emissions, not less. Carbon dioxide emissions thus cannot be controlled by the same processes that control air pollution from fires. They have to be managed separately, either through not burning or through carbon sequestration. Section 4.14 of the EIR needs to be rewritten to reflect this basic reality, as does SPR CC-1, CC-3, and CC-4.

3.C. Why are BIO-5 and BIO-6 mentioned in SPR CC-2 (p.4-434)? These two SPRs have nothing to do with carbon sequestration. The DEIR does need SPRs to deal with carbon sequestration, but it is not CC-2. This SPR needs to be totally rewritten to be useful.

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[64] Syphard, A. D., Keeley, J. E., Massada, A. B., Brennan, T. J., and V. C. Radeloff, V. C. (2012). Housing arrangement and location determine the likelihood of housing loss due to wildfire. PLoS One, 7(3), e33954.

[65] Syphard, A. D., Keeley, J. E., and T. J. Brennan, (2011). Comparing the role of fuel breaks across southern California national forests. Forest Ecology and Management, 261(11), 2038-2048.

3.D. What is the relationship between the VTP and CALFIRE's responsibility for sequestering carbon? Since CALFIRE has responsibility both for administering the VTP, which appears to be only about removing plants, and for carbon sequestration through planting plants, there needs to be an analysis of the impacts of these two programs on each other. After all, they are in fundamental conflict: fire protection seeks to remove plant matter from the landscape, while sequestration seeks to add it to the landscape. One might expect close coordination between these two programs and how they impact each other, yet there is no mention of it in the DEIR. Specifically, the DEIR needs to analyze:

- How will the VTP sequester the CO2e it produces (see 3.C. above)?
- How will mistakes and accidents increase CO2e emissions from the VTP?
- What is the rate or probability of CALFIRE controlled burns escaping control and becoming wildfires?
- How are escaped fires controlled, and how much do they burn relative to the proposed size of controlled burns?
- How are impacts from escaped burns assessed individually and collectively across the VTP?
- What happens if an escaped wildfire impacts a carbon sequestration site?
- Can CALFIRE's carbon sequestration programs be used as mitigation for the greenhouse gas impacts generated by the VTP?

3.E. Why did the DEIR ignore the method suggested in the California Chaparral Institute's response to the Notice of Preparation from October 24, 2015? That method would have avoided at least some of the issues raised in 3.A. and 3.D.

4. Why is the DEIR contain so many misstatements based on scientific papers, reliance on anecdotal evidence, and avoidance of scientific advice? We fully support the California Chaparral Institute's comments in their letter of May 24, 2016 ("CCI letter"). Some points we find problematic:

- **Why does the DEIR misquote the science?** The CCI letter contains ample documentation of this, including one scientist denying that his paper said what was implied in the DEIR. We strongly agree with the assessment, and ask the same.
- **Why does the DEIR rely on anecdotal evidence?** This is particularly apparent in the definition of the WUI, which is defined in the DEIR solely in reference to how far embers can fly. As noted in Appendix A of the CCI letter, there is no good science to support 1.5 miles as anything other than a polite political fiction, chosen from overheard conversations at a conference, based on what others might find acceptable. There is no reality behind this anecdote According to the CCI letter and the references therein, the 2009 Bunyip Ridge fire in Australia projected embers 20 km (about 12 miles), while the ongoing Ft. McMurray fire is reported to have projected embers 10 km (about 6 miles). 1.5 miles is insufficient to stop all embers during catastrophic wildfires.

Worse, 1.5 miles is a silly number. If VTP projects are supposed to clear 260 acres on average, that is 11,325,600 square feet, and a 1.5 mile wide WUI clearance would be 7,920 feet wide. If one does the math, a 260 acre VTP clearance would create a 1.5 mile wide fire break that is 1,430 feet long, and such a firebreak only works if it is pointed directly at the oncoming fire, and somehow the fire doesn't burn down the uncleared sides of the fire break. Conversely, there is increasing evidence for the utility of 300 feet of fire clearance around structures, and a 260 acre VTP project could be used to create 7.15 linear miles of fire break 300 feet wide. Choosing 1.5 miles at worst leads to silly projects. Why use it at all? Why not try approaches that appear more useful based on repeatable tests of evidence?

5. Why are there so many contradictions within the DEIR? It is riddled with them, and they are non-trivial.

- One example, from page E-3: "California's tremendous diversity in vegetation translates into a similar diversity in fuel types, with a resultant variation in fire behavior throughout the state. Considering statewide variations in fire behavior and the need to characterize it at a workable scale for a statewide environmental analysis, the vegetation of California is condensed into three main groups based on the distinct fire behavior each group exhibits. These groups can be classified as tree dominated, grass dominated, and shrub dominated vegetation formations." Really? Would any firefighter consider white fir and ponderosa pine to have the same fire ecology? How about other pairs of trees and shrubs that have highly divergent fire ecology: sequoia and redwood, lodgepole pine and whitebark pine, chamise and scrub oak? Clearly, the DEIR failed to usefully simplify the complexity, so we are left concluding that the original statement about diversity in fuel types was correct, and that the analysis failed to account for it at all.
- **The contradictions become more problematic when dealing with biological cumulative impacts.** The DEIR states (p 5-24) that "[o]verall, it is impossible to precisely specify at the scale of the state or region both the biophysical and economic ramifications of interaction between disturbance and biological resources."

Later it says (p-5-24) that "[c]umulative effects occurring at the scale of the state or the region may not inform project level cumulative effects analysis...Cumulative effects, either negative or positive, can potentially impact individual species of concern, the distribution and sustainability of special habitat elements, wildlife, vegetation structures, and other biological resources. Cumulative effects attributable to these kinds of impact mechanisms are generally most reliably assessed at the scale of the individual project and lands immediately adjacent."

At this point, the DEIR is going against CEQA's intent with PEIRs, as noted in section 1 above. Unfortunately, it goes on to say that (p. 5-25) "[t]he VTP Program EIR cumulative impact analysis, conducted at the scale of the watershed or bioregion, identifies and assesses impact mechanisms that may influence landscape scale biological resource issues such as wildlife movement or habitat capability across broad regions, likelihood of genetic interchange, change in plant community composition as a result of non-native species establishment, or change in species distribution." Really? Where is this analysis? What were its conclusions? This part of the DEIR should be thousands of pages long.

Finally (p. 5-27) the DEIR states, "[b]ecause of the amount of acreage eligible but not receiving treatment under the VTP, **the proposed Program would likely result in a less than significant cumulative effect on biological resources at the bioregional scale** [emphasis added]. Wildfires would continue to occur in California, having both negative and positive effects on biological resources and wildlife habitat condition; the magnitude of effect being dependent on a wide suite of physical, biological, and climatic variables."

This is an absurd, contradictory conclusion. It appears to say that, because only 60,000 acres is treated each year out of 22,000,000, there is no cumulative impact at all. Really? An area half the size of Oakland is deliberately burned every year, but that is not significant, because it doesn't burn one-tenth of the state? And an equivalent area is herbicided, grazed, and masticated, but that's not significant, because the project doesn't herbicide, graze, and masticate one tenth of the state? Why does the BoF think this makes any sense at all?

As noted above, it is easy for a single, 260-acre vegetation treatment to wipe out the last stand of old growth chaparral, or to remove critical habitat that causes a sensitive species to spiral towards extinction, or to poison a watershed by accidental release of herbicides into a stream, or to transport a pest or pathogen where it never before existed, or to spark a wildfire that burns thousands of acres, because the crew was impatient and started the fire under inappropriate conditions (as in the 2013 San Felipe Fire). All of these are predictable and analyzable. If such predictable consequences are so hard for the BoF to analyze, why attempt theVTP at all?

If the DEIR is supposed to be a trustworthy document, to meet its Objective 5, to "[p]rovide a consistent, accountable, and transparent process for vegetation treatment monitoring that is responsive to the objectives, priorities, and concerns of landowners, local, state, federal governments and other stakeholders," then **all internal and external contradictions need to be resolved and removed.** How can the VTP be trusted otherwise?

Alternatives to the current VTP and DEIR

When reading the DEIR, one comes away with the overwhelming impression that this is a document written by people who want stuff done without thinking about the consequences. While we understand that impulse, we do not sympathize with it. The problem is that the VTP, if implemented as written, would be the single biggest igniter of wildland fires in California, igniting over 100 every year. While all of these are supposed to be controlled burns, the sheer number of ignitions means that some, eventually, will go out of control and cause damage through simple bad luck. Moreover, the VTP will be the single biggest vegetation-clearer. If the biological SPRs are implemented as written, VTP employees and contractors will become the single biggest danger to sensitive plants in the state. If scientists turn out to be right about fire behavior, most VTP activities will have little or no effect on saving lives or property from wildfires, while spending hundreds of millions of dollars.

This is why we care about consequences. The proposed VTP is far too hulking a program to run it impulsively and not analyze its predictable consequences.

We also care because the VTP simply doesn't add up as written. If 22,000,000 acres are " appropriate for treatment" and 60,000 acres are treated every year, it would take almost 367 years for each appropriate acre to get treated once. That's simply pointless. Old growth chaparral can re-establish itself in well under 367 years. The State of California is less than half that age. If the VTP's goal is truly treat WUI areas, that takes repeated visits every few years. In any case, the VTP can only include a small fraction of those 22,000,000 acres. There's no utility in making the program area unworkably large, and there's especially no point in using the scale of acres appropriate for treatment as a way to evaluate alternatives. Most of the land is untreatable anyway.

Then there is the time scale of preparation. The VTP in its current incarnation has been around since 2013, and its roots go back to the 1990s. That's a long time, and a lot of analysis and project design could have been accomplished in that interval. Unfortunately, the DEIR is still focused on trying to avoid that analysis through a combination of pushing it forward (contrary to

CEQA) to individual projects, hiding motivations, padded, repetitive, vague, contradictory and obfuscatory writing, ignoring reality, and simple sloppiness. As a result, the process has wasted years, and is no closer to satisfying CEQA or satisfying people, like us, who will have to deal with the VTP's consequences.

Fortunately, there are workable alternatives:

- **Base the VTP's objectives and strategies on science.** We understand that many firefighters distrust science, so we propose that the term "science" be accepted by the VTP preparers as the stuff that turns out to be true whether anyone believes in it or not. The science that underlies the VTP has to be the things that keep firefighters and others from being burned, properties as safe as possible, and keeps the VTP from being an engine for extinction, type conversion of native lands to weed-fields, and a major vector for pests and pathogens. This is the type of science CNPS tries hard to promote.
- **Create a program that implements those objectives and strategies, again using science.** This is common sense, although some may not see it that way. For example, the DEIR notes that "cost and time to meet environmental review requirements, surveying for and mitigating treatment effects to threatened and endangered species" are major impediments to treating 120,000 acres per year under the existing Vegetation Management Program ("VMP", p. 1-15). Oddly enough, agencies like the National Park Service somehow manage to get programs done within the constraint of environmental review requirements. Is the problem in the requirements, or within BoF's system for meeting them? This is an awkward, but critical question. If the problem isn't with the environmental review requirements, then the VTP is based on a fundamentally wrong assumption, and BoF needs to look at other options for accomplishing its objectives.
- **Front-load the analysis into the PEIR, rather than pushing it down to projects.** This is what CEQA requires. CNPS agrees with the BoF that we need to treat at least some vegetation within 300 feet of homes. We also agree that, in some parts of the state (like some pine forests in the Sierra Nevada), we need more controlled burns. Were the VTP limited to projects that have broad-based support, it would be in place right now. Unfortunately, none of this analysis or consensus seeking went into the VTP or its DEIR. If it had, many of the problems we identify would not exist.
- **Set hard boundaries early.** The math for the VTP simply does not work, and to be blunt, we suspect that a PEIR that realistically tried to analyze the impacts to 22,000,000 acres of any project would be unworkably huge. We are also quite sure that any real VTP will be a small fraction of that size. We are also quite sure that there are projects that everyone wants done. It should not be as hard as the project proponents think to figure out where projects need to be done and are likely to be done, and to focus the VTP down so that it only works on those areas. Indeed, once the VTP has done that, it might be easier to expand it from a small area using supplemental EIRs, rather than trying to deal with an unworkably huge initial project.
- **Follow CEQA exactly, and get the environmental analysts involved at the design stage, not at the end.** The point is to identify critical problems and avoid them through design changes, rather than solidifying the design and being left with a mess to mitigate. Environmental analysts earn their pay because they are, on an per-hour basis, substantially cheaper than lawyers, and sometimes even cheaper than firefighters. Their best role is helping people spot and avoid predictable problems, rather than in covering up issues. Many

southern California developers have learned this advice, and their projects get built without drama. We suggest that state agencies might find it useful as well.

- **Use a multi-year, overlapping planning process for each proposed project.** Since we can expect the climate to get more extreme in coming years (bigger storms, bigger droughts, and so forth), planning for things like burn days for controlled burns is going to be an exercise in patience. Rather than trying to go from plan to treatment in a single year, we suggest using a multi-year process, like the existing VMP, so that areas can be surveyed by professional biologists, local information and buy-in can be sought, and plans can be made ready for when the weather cooperates. Moreover, overlap projects, so that some are being researched while some are being implemented and others are being evaluated afterwards. Rushing will not just make waste, it may make wildfires, injure firefighters, and send species into extinction. Is convenience really worth this price?
- **Consider taking five years to create the next iteration of the VTP.** This is not for our convenience, but because so many things are changing right now:
    - Fire behavior may be changing with climate change, and new types of wildfires may be emerging.
    - California is still developing its climate change response by both limiting emissions and increasing sequestration, and it is fairly clear to us that few people in California government understand its ramifications yet.
    - Pests and pathogens are spreading rapidly, and new ones are showing up.

How much damage can the BoF do by rushing to implement a vague, opaque program at this time? Our strong sense in reading multiple versions of the DEIR is that the people who wrote it really did not understand most of the issues they wrote about, nor did they get help from some really good in-house researchers, such as the fire researchers in CALFIRE. We believe that the BoF needs to take a couple of years to understand and embrace what the 21st Century has in store for it, rather than rushing to implement a bigger version of the 1980s-era VMP. We only wish that this process had started a decade ago, rather than now.

Unfortunately, none of these suggestions change our basic opinion, which is that this DEIR needs to be thoroughly rewritten and recirculated, and that the VTP as written is unworkable. Please take the time to do it right.
Please keep us informed of all future developments with this and related projects. Thank you for consideration of our comments and questions.

Sincerely,

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VIA U.S. and Electronic Mail February 15, 2013

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Re: Draft Programmatic Environmental Impact Report For The Vegetation Treatment Program of the California State Board of Forestry and Fire Protection (SCH #2005082054)

Dear Mr. Gentry:

We appreciate the opportunity to comment on the Draft Programmatic Environmental Impact Report for The Vegetation Treatment Program Of the California State Board of Forestry and Fire Protection ("Report," “Program,” "VTPEIR").

The San Diego Chapter of the California Native Plant Society (CNPSSD) works to protect California's native plant heritage and preserve it for future generations. CNPSSD promotes sound plant science as the backbone of effective natural areas protection. We work closely with decision-makers, scientists, and local planners to advocate for well informed and environmentally friendly policies, regulations, and land management practices.

CNPSSD is a supporter of appropriate land management practices which result in sustaining special status California native plant species, both on properties dedicated to that purpose (e.g. State, Federal, County, or local and private conservation parks or preserves) and other properties (private and public) where these species occur, and where their continued survival helps provide a genetic buffer for their survival, should catastrophic events destroy them in protected areas. We strongly agree that fire and invasive species are critical issues that must be actively managed. However:

CNPSSD strongly recommends that this VTPEIR NOT be certified, due to lack of substantial evidence to support contentions and conclusions made throughout the document, due to substantial procedural lapses and irregularities, as well as the other issues we list below.

Based on the Report, we have many questions, including:

12. How the Report deals with its procedural lapses and irregularities
13. Whether all the impacts have been properly considered
14. Why does the Program description lacks substantial evidence to justify fundamental premises? Why is it inaccurate and overly simple?
15. How will the Program achieve its goals?

The following groups of questions are based on the concerns summarized above. We formally request that the Board of Forestry fully consider and respond to our questions in an effort to improve the Draft VTPEIR by clarifying, among other things, its purpose, rationale, and management structure.

1. Procedural Lapses and Irregularities

1.A. Why did the Report writers choose to create an EIR, not an EIR/S? In Chapter 2: Proposed Program, on Page 2-1: "The 38,000,000 acres that might be treated under the Proposed Program are comprised of about 34,958,000 acres, which are either privately owned or State owned lands (e.g. Department of Parks and Recreation (DPR) lands) that are designated as SRA or LRA, and about 3,000,000 acres of federal DPA lands (see glossary for description of DPA)." According to the CEQA Guidelines, the Program should have a combined EIR/S, not an EIR, since the Program proposes to cover federal lands as well as State lands.

1.B. Where is the Program Map, and what parcels are subject to the Program? According to CEQA Guideline 15124(a): "The precise location and boundaries of the proposed project shall be shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map." Neither of these maps is supplied. While maps of California and "bio-regions" are presented, approximately 1/3 of the state is actually affected by the Program, so these maps are insufficient for land owners to determine whether they are affected by the Program or not. How can the Report represent that the impact analysis is sufficient, if neither the place nor the timing of the Program are given? Environmental impacts must, by definition, have an environment in which to occur. Phrasing the acreage as "might be treated" is insufficient. If a parcel is considered eligible for the Program, then the Program has a boundary, and all parcels within that boundary must shown on maps, to circumscribe the environment impacted by the Program.

1.C. What are the objectives of the Proposed Program? Do the Goals of the Program adequately cover the Program's Objectives under CEQA? According to CEQA Guideline 15124(b), an EIR must contain "a statement of objectives sought by the proposed project. A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project." We failed to find clearly labeled objectives, and assume in this analysis that the Goals (Report Page ES-iii) are the objectives. However, the alternatives are evaluated entirely on how much acreage will be treated, which subset of laws will be followed, how expensive it is to follow all Federal and State regulations, and so forth, and the goals were never mentioned in consideration of alternatives. Furthermore, the goals are vague and never quantified, they are never referred to in the environmental checklist that is apparently the heart of the Proposed Program, there is no system proposed for monitoring Projects to determine whether they further Program goals, and there is no system to mitigate cumulative impacts from potential Projects below the level of significance, nor to monitor or report on mitigation efforts. Were we reading this document cynically, we would assume the objective of the program is to clear as much land as possible every year. Due to this lack of clarity, we want to know what the true Objectives of the Program are, and whether they are properly represented by the Goals.

1.D. How was the Notice of Availability publicized? According to CEQA Guideline 15087: "Notice ... shall also be given by at least one of the following procedures:
(1) Publication at least one time by the public agency in a newspaper of general circulation in the area affected by the proposed project. If more than one area is affected, the notice shall be published in the newspaper of largest circulation from among the newspapers of general circulation in those areas. (2) Posting of notice by the public agency on and off the site in the area where the project is to be located. (3) Direct mailing to the owners and occupants of property contiguous to the parcel or parcels on which the project is located. Owners of such property shall be identified as shown on the latest equalized assessment roll."

Normally, EIRs include an appendix documenting their public notices. The Report failed to provide this information, so we investigated. We failed to find a Notice of Availability using online searches of the *Los Angeles Times* (http://classifieds.latimes.com/ classifieds?category=public_notice) (which, according to Wikipedia, has the largest distribution of California newspapers), the *Sacramento Bee* (http://www.sacbee.com/ adperfect/), the *San Francisco Chronicle* (http://www.sfgate.com/ chronicle/), the *San Jose Mercury News* (http://www.mypublicnotices.com/BayAreaNewsGroup/ PublicNotice.asp), or the *UT San Diego* (http://www.legalnotice.org/pl/sandiego/ landing1.aspx). The website legalnotice.org covers legal notices in newspapers throughout the US, and we were unable to find it in there. As for posting the notice on and off-site, the site is not defined, so this is not practicable. As for direct mailing, a close relative owns a house immediately adjacent to state parks land. This land contains chaparral and coastal sage scrub, and has been the periodic target of vegetation management. Nonetheless, this relative never received any written or emailed notice about this program. While our investigation was not exhaustive, we found no evidence of public notice beyond the Project website itself. How was the Notice of Availability publicized?

1.D Why does the Report state that floristic surveys "may be necessary" rather than being mandatory? In the "Minimum Management Standards" section (page 2-6), Item 5 states: " A database search will be conducted for each project by a query of the most reasonably available sources and databases for biological information, including but not limited to, the CNDDB and BIOS. The search shall include a minimum search area of nine (9) USGS Quadrangles surrounding the project area. In cases where the project area extends into multiple quadrangles all adjacent quadrangles shall be included. Surveys may be necessary to determine presence/absence of special status plants or animals and to determine and evaluate site-specific impacts. The applicant will evaluate the potential direct and indirect impacts caused by the Project."

According to CEQA guideline 15125: " An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published." This includes the plants and animals within the project's boundary.

Floristic surveys are never optional. They are a fundamental part of describing the environmental setting for the project. All a 9-quadrangle or CNDDB search does is that it helps to determine what sensitive species may be present on the project site. All databases are known to be incomplete, sometimes radically so. They cannot be relied upon to determine either the presence or the absence of any sensitive species, and current surveys of project sites are absolutely necessary to determine what occurs on all project sites. Why does the Report state that these are optional? How does this comply with the California and national Endangered Species Acts and agency regulations for implementing these acts?

1.E. Why does the Report not state which plants are impacted by the Program? Appendix B appears to be a list of all List 1A-4 plants in California. This makes no sense, for a number of reasons:

1. Why consider List 1A species? They are thought to be extinct, and therefore not affected by the Program.
2. Why consider all species? Yes, the report says " Addressing potential impacts of the VTP to every taxon at the programmatic level would be impractical," (Page 5.5-12), but the list presented in Appendix B is silly. It includes plants such as the extremely rare *Cercocarpus traskiae* which will never be subject to vegetation treatment. Nor will a wide selection of beach dune plants (e.g. *Acmispon nuttallianus* (*Lotus nuttallianus*), *Phacelia stellaris*, and *Nemacaulis denudata* var. *denudata*) that mostly occur on urban dunes, in small areas that are highly unlikely to ever come under any vegetation treatment. This list of non-impacted could be extended almost indefinitely, and should have been, because the Report notes which vegetation types are excluded from its purview. The fundamental point is that the Program does not affect all listed plants, it affects a subset of them. Why was this subset not identified? Certainly, a CNDDB search of the parcels affected by the Program would produce a suitable list. Why was this search not performed?

1.F. Why did the Report reject the Environmentally Superior Alternative? While the Report states that the Program is the Environmentally Superior Alternative, the document does not make the case. Alternative 3 and Alternative 4 make the case for following water quality or air quality regulations, but the document states on page 3-15 that treatment acreage goals have priority over complying with both air quality and water quality regulations, and therefore the proposed Program does not comply with either.

We were not aware that failure to comply with state and federal regulations was an option for state agencies. Ever.

Nowhere in the Program goals does it say that acres treated is a goal. Therefore, acres treated is an invalid criterion, and using it goes against the Program's stated Goals. Given that acres treated is an invalid criterion by which to assess the alternatives, why did the Report reject the Environmentally Superior Alternative of complying with the laws, regulations, and guidelines of the United States and the State of California?

1.G. How can a Program that fails to comply with all state and federal regulations be certified? As noted in 1.F. above, complying with both air and water quality regulations (which are both state and federal) was rejected. If the Program as proposed cannot comply with all relevant state and federal regulations, how can it be certified as compliant with CEQA and NEPA?

1H. Why were the alternatives (both accepted and rejected) not evaluated in terms of how they would meet the Program's stated goals ? CEQA guidelines state that alternatives "shall include those that could feasibly accomplish most of the basic objectives of the project." (CEQA Guidelines 15126.6. Consideration and Discussion of Alternatives to the Proposed Project"). Since the Report fails to list the Program's objectives, we assume that the Program's goals are the "basic objectives of the project." None of the alternatives listed are characterized by how they would meet the Program's goals. None of the alternatives were rejected by how they would fail to meet the Program's stated goals. On pages 3-15 and 3-16, the Report rejects both an alternative that complies with air and water quality regulations, and a proposal that concentrates efforts where fire risk is greatest. In both cases, the proposals are rejected on the grounds that too few acres would be treated, or they would be treated in the wrong place. How do the rejected alternatives fare when evaluated in how they will meet the Program's stated goals?

1I. Where is the Environmental Checklist? How will the Checklist protocol described preclude EIRs for all projects under the Program? The Program appears predicated on the creation of an environmental checklist to streamline environmental review of Projects instituted under the Program. However, there is no Environmental Checklist in the Report. Chapter 8 "Environmental Checklist" contains a set of criteria for generating an initial study. Such lists are already freely available on the internet through the Association of Environmental Professionals, so the idea of generating a special checklist is unnecessary. Worse, since the Program admittedly fails to comply with both air quality and water quality regulations, and because we have many other questions about whether it properly complies with CEQA and NEPA, a checklist generated per the vague specifications in Chapter 8 will not, in fact, comply with CEQA, nor will replace a CEQA initial study. Given the lack of specificity, outdated, incomplete, and questionable science, lack of consultation with agencies, failure to generate fauna and flora lists, and reliance on obsolete vegetation maps, among other problems, any project proposed under this Program might do better to ignore the Program and generate its own EIR independently, using existing the existing CEQA checklist.

2. Were all impacts considered?

2.A. What consultations were performed with the California Water Resources Board, Regional Water Control Boards, California Air Resources Board, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service the Army Corps of Engineers, The Environmental Protection Agency, the US Forest Service, and the National Park Service? What other agencies should have been consulted that were not? What other agencies were consulted, and what was the result of the consultation? Normally, all consultations are included in the EIR as appendices, but these do not appear in the Report. Providing the text of consultations will help determine how the impacts were determined, and whether all impacts were determined to the satisfaction of the responsible agencies.

2. B. How does the Program comply with the CARB Smoke Management Program of 2000? The report appears to assume that the California Air Resources Board (CARB) has yet to develop a Smoke Management Plan (Page 4.6-2). According to the CARB website (http://www.arb.ca.gov/smp/ smp.htm), the CARB adopted a Smoke Management Plan in 2000, and guidelines are available online. It appears that the proposed Program will render the state out of compliance with EPA guidelines, and it is unclear whether the Board of Forestry consulted with the Air Resources Board both on these impacts and on mitigating them.

2.C. Why did the Report Writers and Program choose to use the WHR? The Wildlife Habitat Relationships (WHR) system is obsolete and does not comply with national vegetation mapping standards ((http://www.fgdc.gov/standards/projects/FGDC-standards-projects/vegetation/NVCS_V2_FINAL_2008-02.pdf/), It was superseded most recently by the *Second Edition of the Manual of California Vegetation* (Sawyer, Keeler-Wolf and Evens, 2009), which does comply with national standards.

A. Why was the WHR chosen?
B. Why did the writers choose to ignore the wealth of fire characteristics given in the *Second Manual* for every flammable vegetation type in California?
C. How will the Program fit current, compliant maps of California vegetation into the inadequate, outdated framework of the WHR? Wouldn't the current system provide more information for less effort? Won't such problematic mapping generate significant ecological impacts due to errors and data loss? How will the Program mitigate for such impacts?

2. D. How will the Program affect carbon sequestration efforts? On page 4.4-18, "The Role of the VTP in Carbon Sequestration and in Reducing California's Greenhouse Gas Emissions" fails to explicate the role of the Program in carbon sequestration. So far as we can determine, the only role the Program plays in carbon sequestration is by providing fuel to biomass-burning power plants. This has the effect of taking sequestered carbon out of vegetation and blowing it back into the air. In fact, most of the activities under the Program will decrease sequestration by removing biomass and causing it to degrade, releasing carbon back into the air. Worse, the Program may scuttle market-based carbon sequestration efforts in California. After all, why should anyone invest in forest lands to sequester carbon in biomass, if the Program will allow someone to arbitrarily come along and reduce the biomass on that land within the next decade or two? Such a risk is totally unacceptable to most businesses, and insuring carbon sequestration against inadvertent or deliberate loss to Program treatments would impose a ruinous tax on carbon sequestration efforts.

2.E. Why does the Program exacerbate the type conversion of woody vegetation into herbaceous vegetation? How will it ameliorate the increased threats imposed by too-frequent vegetation treatments? On page 2-23, the Program states that "maintenance is assumed to occur at the following time intervals: Grasslands – 2-5 years after previous treatment, • Shrublands – 5-10 years after previous treatment, • Forestland – 10-15 years after previous treatment." According to well-established science, chaparral will type-convert to weedlands if the fire return interval is less than 30 years, and it is no stretch whatsoever to assume that any shrub-based vegetation will be replaced by herbs if it is treated more than once a decade. This is the basis for the centuries'-old practice by ranchers of converting brush to pasture by burning. Since herbaceous vegetation is more ignitable, and demonstrably more dangerous to houses (e.g. Syphard, et al. Housing arrangement and location determine the likelihood of housing loss due to wildfire. PLoS ONE 7(3): e33954), we strongly question these treatment intervals. They seem to run contrary to the stated goals of the Program, to " reduce catastrophic losses to life and property consistent with public expectation for fire protection" (Goal 2).

2.F. How does the program justify destroying more acres of vegetation than recently documented wildfires consume? According to the Program, 216,910 acres are considered for annual treatment (p. 2-25), while 198,769 acres of CAL FIRE lands were burned each year, according to CAL FIRE's own data (five year running average). (http://cdfdata.fire.ca.gov/ incidents/incidents_stats?year=2012, accessed 1/29/2013), If the Program achieves anything like its proposed scope, it will be more destructive than the fires it purports to ameliorate, because it guarantees type conversion, exotic plant invasion, soil damage, and other impacts that are noted in the Report. Even if we count the 53% of lands subject to prescribed burns (114, 962 acres/year), this is 57.8% of the total lands burned every year. Indeed, 114,962 acres burned/year would match the nineteenth largest California fire in recent history (http://www.fire.ca.gov/ communications/downloads/fact_sheets/20LACRES. pdf), and would happen every single year. It appears that the Program wants to destroy California's vegetation in order to save it, in a grotesque echo of the worst parts of the Vietnam War. How does the Program justify such sustained, epic-scale destruction? How will it monitor and demonstrate that such destruction will meet any of the Program's goals? What will it do if this level of destruction fails to make Californians safer from fire?

3. Why does the Program description lacks substantial evidence to justify

fundamental premises? Why is it inaccurate and overly simple? The various sections of the document, generally organized following the format of an EIR, appear at first glance to offer a broad historic, statistical, regulatory, land use, and geographic context to the topics. But upon closer inspection, one finds the proposed program is based on a number of unjustified assumptions, that it ignores best available science, and that in very many instances the report cites inappropriate, irrelevant, or debunked references. Moreover, although the PEIR is over 1300 pages long, why does it contain no meaningful information about the program's proposed project level planning? The closest the Report gets to a project level environmental analysis is a carefully documented process of combining a lot of coarse data that CAL FIRE states to be unreliable into variously unreliable, extremely coarse, over-generalized, and not very informative indices plotted statewide on a series of tiny maps at an effective scale of 1:25 million. For all these reasons and more, the document is legally inadequate for its intended purpose as an Environmental Impact Report.

3.A. How can CEQA be appropriately applied to the VTPEIR in a Program sense when groups or series of projects addressed within the Program are NOT similar in impacts, and when potential impacts can NOT be avoided or mitigated in a similar manner? What standards does the Program propose to determine similarity of impact and similarity of mitigation? How will these similarities be assessed at the Programmatic level? What will the Program do if Project implementation uses it incorrectly, to justify impacts that would not have otherwise occurred? In Chapter 1.6 of the VTPEIR, the Report states, "An agency is generally not permitted to treat each separate permit or approval under a program, such as the VTP, as a separate project segment if the effect is to avoid full disclosure of environmental impacts. However, CEQA does encourage the application of a programmatic approach **where a group or series of projects are similar in activities and impacts** and **where potential impacts can be avoided or mitigated in a similar manner**." [bold added for emphasis]

One of the over-riding problems in the Report is the simplistic approach that attempts to make fire issues out as broadly similar across the region, when in fact they are very different. For example, the PEIR does not distinguish between surface fires in ponderosa pine and crown fires in chaparral, nor does it explain how these different fire regimes have been affected very differently by past fire management activities and as a consequence require very different approaches to future management. Nevertheless, the VTPEIR treats both fire regimes similarly by employing a simple one-size-fits-all premise upon which to base the rationale for treatments and impact analyses, in short; the Report claims that "increased treatments will result in less frequent and less severe uncontrolled burns, and increased treatments pose no significant impacts to the environments treated."

Much of the literature supporting treatments comes from surface fire regimes in coniferous forests and therefore is not appropriately applied to shrubland ecosystems. One important example of where these two ecosystems differ markedly is in the impact of fire severity. High severity fires have some negative impacts on certain forest types, however, shrubland ecosystems are highly resilient to high severity fires and in fact one of the major threats, alien plant invasion, is promoted by low severity fires. Does CAL FIRE recognize the fact that, in southern California, wildfire frequency intervals have become so short as to threaten the continued existence of natural habitats such as chaparral, inland sage scrub, pinyon-juniper, and coastal sage scrub? These habitats are the ones stabilizing and protecting our watersheds in highly erodible mountain and hill topography.

Similar groups or series of projects, and similar impact avoidance / mitigation measures could be identified only through categories ecosystem within finer geographic regions, and only among finer vegetation classifications than are presented in the VTPEIR. The similar treatment of vastly different vegetation types operating under different fire regimes, the broad characterization of program area (California) and landcover types (CWHR classifications) as presented in the draft VTPEIR grossly oversimplify the "similarities" intended to justify a program approach to the CEQA, making it impossible to assess "full disclosure of environmental impacts" of treatments, and thereby voiding the BoF/CAL FIRE's ability to legally certify this draft PEIR under CEQA.

3.B. Where is the substantial evidence to support the PEIR's plan to increase burning across the Program area's bioregions by 36%? In Table 2-4 - Proposed Program Treatment Acreage by Bioregion, the PEIR indicates the Approximate Annual Acreage Treated during the ten-year program period is 216, 910 acres. The PEIR states that 53% of vegetation treatments will be prescribed burns. That means that each year 115,000 acres will be burned under this program. At page 4.2-3 of the PEIR historical wildfire trends are estimated (since late 1800s) to average 320,000 acres burned per year in California. CAL FIRE intends to increase the number of acres burned (generally in wildland habitats) by 115,000 acres per year. How does the PEIR justify increasing the acreage burned by 36%?

3.C Why doesn't the PEIR concentrate on the first three "major policy components" of the California Fire Plan? In Chapter 1.3 - Regulatory Authority: The California Fire Plan (BOF, 2010) has the following "major policy components":
"• Land use planning that ensures increased fire safety for new development
"• Creation of defensible space for survivability of established homes and neighborhoods
"• Improving fire resistance and structural survivability of homes and other constructed assets
"• Fuel hazard reduction that creates resilient landscapes and protects the wildland and natural resource values
"• Adequate and appropriate levels of wildland fire suppression and related services
"• Commitment by individuals and communities to wildfire prevention and protection through local fire planning."

1. Land use planning that ensures increased fire safety for new development inside or adjacent to wildlands requires planning agencies to understand what measures the developer and the residents must take to ensure fire safety while preserving soil stability, groundwater retention and natural resources. This requires not just a website, but demonstration structures and seminars for planners showing topographic layouts of developments that have survived wildfires. Board of

Forestry and CAL FIRE structures should all meet this requirement so they can be shown as examples to visitors or on special days like "open houses" at fire stations.

2. Creation of defensible space for survivability of established homes and neighborhoods is a crucial policy that CAL FIRE must implement. This Report recognizes the increasing population in California and the increasing encroachment into wildlands or into wildfire-prone topography. CAL FIRE emphasizes the importance of the "first thirty feet from a house or other structure" as the most importance area of defensible space". Where is that discussed in this PEIR? Where is the program element that requires all Department of Forestry and Fire Protection structures to have the first thirty feet landscaped (with locally appropriate native plants) as a defensible space for demonstration and for defense? Where is the program element that requires pressure on all county fire stations located in or adjacent to wildfire prone lands to landscape the first thirty feet from all their structures as defensible space as demonstrations of what defensible space looks like for local residents, using locally appropriate native plants and working with local garden clubs and California Native Plant Society Chapters?
3. Improving fire resistance and structural survivability of homes and other constructed assets requires instructing local and regional planning agencies on what requirements they, their fire departments and their building and safety departments need to add to building or remodeling permits to improve or to ensure survivability of new or remodeled structures in areas prone to wildfire impacts.
4. These first three policy components are the most important in today's world. People are not going to the CAL FIRE website, they are not reading their brush notices, they do not know what "defensible space" means and brush inspectors do not look at the first thirty feet from the structure when they inspect homes for compliance with local fuel modification regulations. Why aren't CAL FIRE and the Forestry Board setting up demonstration gardens and teaching these residents of fire areas how to defend their structures and their resource values? Why aren't brush inspectors inspecting the first thirty feet from structures and out to one hundred feet from the structure?
5. The last three major policy components are what CAL FIRE and Forestry do already. The Fire Safe Councils are an excellent idea but where is CAL FIRE and County Fire Departments buy-in on their own properties?
6. Vegetation treatments start at the structure. Why isn't this PEIR strongly advocating for vegetation treatment and management in the first thirty feet from all structures, in all jurisdictions?

3.D. Where is the substantial evidence to support the increase in chaparral treatment planned in the PEIR? Where is the justification for burning, masticating/mechanically clearing, and eventually degrading and destroying shrublands such as southern California chaparral and other types of shrub communities around the state, as well as sage scrub in areas where these plant habitats are forming deep, complex root systems, sequestering vast amounts of carbon, stabilizing slopes, preventing soils from becoming hydrophobic, acting as guardians of broad steeply-sloping watersheds and providing nesting, resting and food sources for a highly biodiverse wildlife, both resident and migratory? These habitats need 40 to 100 years to recover from fires, replenish their seedbanks, restore their canopies and replenish their root systems. Where in the Report is the scientific literature that would demonstrate these facts to be true?

3.E. Where is the substantial evidence to justify increasing the area to be treated, generally by burning or mechanical removal, from 34,824,500 acres to 37,958,400 acres? Where in the PEIR is there provided evidence to substantiate the purported need to increase treated acres in order to achieve Program goals?

3.F. Where is the substantial evidence that supports the evaluation of effects from non-native invasive species?
Assessments quantification in the DEIR apparently created from thin air
Having stated that areal quantification of cumulative impacts cannot be known (see italics section under cumulative impacts) the DEIR boldly states what effects will be. A great example is Table 5.5.2 "*Table 5.5.2 Summary of Effects from Non-Native Invasive Species from Implementing the Proposed Program.* " This takes each Bioregion and assesses the effect on weeds from the programs use of Prescribed Fire , Mechanical, Hand, and Herbivory treatments. For every region the chart states "NA/NB - negligible adverse or beneficial effects - those effects that are imperceptible or undetectable." The document presents no quantitative evidence in support of this evaluation, but the narrative does describe many examples where each of the fuel treatments can make the invasive species situation worse. This has been made very evident from regular wildland fire fighting, where the equipment used to fight the fire is frequently "dirty" regarding alien seeds.

3.G. Why was the Program based on questionable science?
The document is characterized by cursory descriptions of mostly out-dated science with little or no summary of points of disagreement. For example, within the summary of Known Areas of Controversy listed in Chapter 2.7, "wildlife, conservation, or biological diversity issues" is not mentioned. We note the more complete descriptions of the PEIR's scientific failings as detailed in comments submitted by both the California Chaparral Institute and Endangered Habitats League.

3.H. Why does the Program assert that biomass burning will ameliorate climate change? The Report repeatedly considers biomass burning as a renewable resource that will help ameliorate climate change (e.g. 4.4-18, 4.11-6). This seems mistaken on three levels. First, biomass takes carbon out of the air, while burning it returns the carbon to the air. This short-circuits biological processes that take carbon out of the air and sequester it back in the ground or in biomass. If we practiced nothing but biomass burning, we would retain our high levels of atmospheric CO_2 indefinitely, so this solution prolongs the problem. Second, plants do not contain just carbon and energy. Burning biomass will release large quantities of nitrogen, and nitrogen deposition has already been shown to favor non-native invasive species (e.g. Allen et. al. 2009. http://www.plantbiology.ucr.edu/faculty/ Allen et al. 2009.pdf). This will exacerbate both air pollution and invasive species problems. Undisturbed native vegetation can effectively exclude most exotics, sequesters carbon, and sequesters nitrogen. Therefore, leaving the vegetation intact helps to solve three problems, while burning it exacerbates all three.

3.I. Why does the report assume that anthropogenic fire, anthropogenic disturbance, and browsing by goats and sheep or other Eurasian herbivores will favor native plants? One central problem is that California's plants have experienced 10,000-20,000 years of anthropogenic fire and disturbance, a few centuries of grazing by domestic livestock, and a few centuries of anthropogenic soil disturbance. In contrast, Eurasian weeds have adapted to 40,000-100,000 years of anthropogenic fire, 8,000-10,000 years of grazing by domestic livestock, and 8,000-10,000 years anthropogenic soil disturbance. Given this history, it seems obvious that Eurasian weeds are better adapted to anthropogenic fire, livestock grazing, and anthropogenic soil disturbance. We are at a loss to understand why the Program assumes any of these methods (fire, grazing, and clearing) can be used on a broad scale to restore native vegetation. As targeted treatments in small areas, they are fine. Antibiotics similarly work when targeted against susceptible bacteria, but wreak havoc when used indiscriminately. Widespread use of the Program's proposed methods will simply favor those species that are better adapted to such disturbances, and elementary evolutionary theory (as well as common sense) strongly suggests those species are non-native invasive weeds, rather than native species.

3.J. Why does the Program not focus on the wildland urban interface? According to recent publications (e.g. Syphard, et al . Housing arrangement and location determine the likelihood of housing loss due to wildfire. PLoS ONE 7(3): e33954; http://www.cnps.org/cnps/publications/ fremontia/Fremontia_Vol38-No2-3.pdf and references therein), land use planning appears to be more important than fuel modification for reducing fire hazards. Additionally, replacing woody fuels with herbaceous fuels appears to increase fire risks to homes, and treating the wildland-urban interface is critical for making homes safe. None of this appears to be considered in the report. How does the Program plan to incorporate this information in creating an effective strategy, and how will the Program be amended to take this information into account?

3.K. Why did the Report cite the San Diego County Wildland Task Force August 2003 "Mitigation Strategies for Reducing Wildland Fire Risks"? In 4.2-8, the Report states that "In its August 2003 report, the San Diego Wildland Task Force agreed that fuel or vegetation management is the single most effective tool available to mitigate fires." **This report was withdrawn by its authors**, after protest by seven of the scientists whose work contradicts the Program's premise that mosaics of age classes reduce shrubland wildfires (detailed in http://www.californiachaparral.com/images/ Letters_to_SD_County___Oberbauer.pdf). Why was a retracted and discredited report used to support the Program?

4. How will the Program achieve its goals? In general, the Report does a very poor job of relating the treatments proposed in the Program to its stated Goals. Therefore, we want to understand how the Program will achieve its goals. This is critical in understanding the impacts of the Proposed Program and its alternatives, and in assessing the cumulative impacts of Projects proposed under the Program.

4.A. How will the Program "Maintain and enhance forest and range land resources including forest health to benefit present and future generations?" (Page ES-iii).

1. What forest and rangeland resources are under consideration? What science supports this determination?
2. How will resource enhancement be quantitatively determined? What science supports this determination?
3. How will forest and rangeland resources be monitored? What science supports this determination?
4. What is the definition of forest health? What science supports this definition?
5. What metrics will be used to assess forest health? What science supports this determination?
6. How will monitoring efforts feed back to determine success for the overall program?
7. What is the proposed budget for this part of the Program?

4. B. How will the Program "modify wildland fire behavior to help reduce catastrophic losses to life and property consistent with public expectation for fire protection?" (Page ES-iii).

1. How does the large body of fire science not considered in the Report address this goal? What substantial evidence supports its validity?
2. How will the Program monitor wildland fire behavior, and losses to life and property? What substantial evidence supports use of these monitoring techniques?
3. What will the Program do if it fails to attain this goal?

4.C. How will the Program "reduce the severity and associated suppression costs of wildland fires by altering the volume and continuity of wildland fuels?" (Page ES-iii)

1. Given that the Program proposes to clear more land every year than fires do on average, how much does the Program budget for its activities, and how will it compare these with suppression costs? How will it make these figures available to the public and to the Lead Agency?
2. How does current science address the notion that altering the volume and continuity of wildland fuels reduces the severity of fires? Is this the consensus view of experts in the field?
3. What will the Program do if it fails to attain this goal?

4.D. How will the Program "reduce the risk of large, high intensity fires by restoring a natural range of fire-adapted plant communities through periodic low intensity vegetation treatments?" (Page ES-iii)

1. What does the Program consider to be the natural range of fire-adapted plant communities? What quantitative measurements do they use to justify this? Is this the consensus opinion of scientific experts in the field?
2. How will the Program incorporate the extensive body of fire relationships in the *Second Manual of California Vegetation* into the Program?
3. Given that most California plant communities burn once or twice per century, how does the program justifying burning more than once every 20 years? This appears to be an increase in fire frequency?
4. How does the Program deal with plant communities such as chaparral, where large, infrequent, high intensity fires are the norm, and frequent low-intensity fires cause type conversion to more highly ignitable (and more dangerous) herbaceous plant communities?
5. What will the Program do if it fails to attain this goal?

4.E. How will the Program "maintain or improve long term air quality through vegetation treatments that reduce the severity of large, uncontrolled fires that release air pollutants and greenhouse gases?" (Page ES-iii)

1. How will the Program measure long-term air quality? Has it consulted with the California Air Resources Board on these measurements? With the EPA?
2. How will the Program measure greenhouse gases released by large, uncontrolled fires? How will the Program measure greenhouse gases released by its proposed operations? What science supports these measures?
3. What will the Program do if it fails to attain this goal? What will the Program do if its normal operations release more air pollution and greenhouse gases than large, uncontrolled fires do?

4.F. How will the Program "vary the spatial and temporal distribution of vegetation treatments within and across watersheds to reduce the detrimental effects of wildland fire on watershed health?" (Page ES-iii)

1. How does the Program define watershed health? What quantitative metrics does it use to measure watershed health? What science supports the use of these metrics?
2. How are these watershed health metrics affected by fire? How will the Program monitor these metrics? What will it cost, and who pays?
3. What science supports the goal? What science is against the goal? What is the current scientific consensus on this topic?
4. What will the Program do if it fails to attain this goal?

4.G. How will the Program "reduce noxious weeds and non-native invasive plants to increase desirable plant species and improve browse for wildlife and domestic stock?" (Page ES-iii)

1. What science supports the notion that the Programs methods will help it attain this goal?
2. How will the Program monitor noxious weed and non-native invasive plant populations? What science supports this?

3. What criteria will determine whether these populations are reduced or not? What science supports these criteria?
4. How will monitoring of noxious weeds and non-native invasive plants be funded?
5. What criteria will the Program use to determine desirable plant species? What science supports these criteria?
6. Will desirable plant species be increased at the expense of sensitive species? If so, why? If not, how will the Program determine that this hasn't happened?
7. How will the Program monitor populations of desirable plants? What science supports these methods?
8. What methods will the Program use to determine whether browse has been improved? What science supports these methods?
9. How will information gathered on the populations of weeds, desirable species, and browse feed back to inform the Program?
10. What will the Program do if it fails to attain this goal?

4.H. How will the Program "Improve wildlife habitat by spatially and temporally altering vegetation structure and composition, creating a mosaic of successional stages within various vegetation types?" (Page ES-iii)

1. Given that in most of California's vegetation, succession takes over a century, how can treatments occurring every 20 years at most establish a mosaic of successional stages? Most shrublands will be converted to weedfields by such frequent impacts.
2. Why does the Program assume that all wildlife benefits from edges and mosaics? Many of the rarest species in California require late successional stages and lack of disturbance. How will the Program mitigate impacts to these rare species?
3. Given that mosaics increase the distance propagules have to cover from parent to suitable niche, won't this goal impair species spread, thereby endangering them through habitat fragmentation? How will the Program mitigate for creating such habitat barriers? What science justifies this approach?
4. How will the Program keep invasives out of the mosaic, given that most invasives are favored by disturbance? How will the Program mitigate for treating these invasives? What science justifies this approach?
5. How will the Program monitor mosaics? What science justifies this approach?
6. What quantitative criteria will be used to determine whether habitat is improved for wildlife? What science justifies this approach?
7. What will the Program do if it fails to attain this goal?

4.I. How will the Program "provide a CEQA-compliant programmatic review document process/mechanism for other state or local agencies, which have a vegetation management program/project consistent with the VTP, to utilize this guiding document to implement their vegetation treatment programs/project?" (Page ES-iii)

1. Given the substantial procedural irregularities, how can any document prepared under this PEIR be considered compliant with CEQA, NEPA, and other pertinent state and federal laws, regulations, and guidelines?
2. What can be done to make the process comply with CEQA and NEPA?

3. How will projects be assessed to determine that they comply with relevant laws through complying with the Program?
4. How will projects be monitored by Program managers to determine that they are complying with all relevant laws under the Program?
5. What will the Program do if it fails to attain this goal?

Thank you for consideration of our comments and questions.

Sincerely,

Frank Landis, PhD
Conservation Chair, CNPSSD

CALIFORNIA
NATIVE PLANT SOCIETY

January 9, 2018

California Board of Forestry and Fire Protection
ATTN: Edith Hannigan, Board Analyst
PO Box 944246
Sacramento, CA 94244-2460

RE: VTP Draft PEIR Comments

Dear Members of the California Board of Forestry and Fire Protection;

The Dorothy King Young (DKY) Chapter of the California Native Plant Society (CNPS) fully supports land management actions that promote the restoration and protection of native vegetation in California. The DKY Chapter focuses on native plant species and natural habitats that occur within coastal Mendocino County, roughly from the Pacific Ocean to the coastal mountains west of Highway 101. We have reviewed the California Board of Forestry and Fire Protection's Revised Draft Program Environmental Impact Report (PEIR) for the Proposed Statewide Vegetation Treatment Program (VTP) and find that, while some proposed actions may benefit native vegetation, others have the potential to cause significant impacts to special status plants and rare vegetation types on the Mendocino Coast. By lacking specificity, and only addressing fire in relation to broad categories of plant communities, the VTP Draft PEIR fails to adequately analyze potential environmental impacts, as is required under CEQA. We share the concerns, including those pertaining to CEQA, that are well articulated in other letters on the VTP Draft PEIR that you are receiving from the Endangered Habitats League, the CNPS Conservation Program Director, and other CNPS Chapters. The proposed VTP Draft PEIR as it is written, should not be certified. Our comments on the VTP Draft PEIR, which are listed below, reiterate some of the general issues that are also raised by others. In addition, our letter focuses on examples of specific ecological concerns regarding our local listed rare vegetation types, all of which must be considered under CEQA, as is true for all rare vegetation throughout California, and for which there is no meaningful discussion in the VTP Draft PEIR.

General comments:

1. The VTP Draft PEIR proposes fuel management activities on an area of more than 23 million acres of extremely diverse vegetation in California, but fails to show scientific evidence that such treatments would actually result in a substantial reduction in the number of catastrophic wildfires. The VTP Draft PEIR lacks the specificity necessary to

substantiate claims that the project will not result in significant impacts to sensitive biological resources, including rare vegetation types and listed plant species. Analysis used in the VTP Draft PEIR is based on broad categories of geographical range (Biological Regions) that contain widely variable and dissimilar habitats, on an outdated vegetation classification system (Wildlife Habitat Relationships (WHR)), and on an oversimplification of plant communities to describe fuel types (tree dominated, grass dominated, and shrub. As a programmatic EIR, the document also fails to provide adequate mitigation measures to ensure that future projects tiering off of the program avoid unmitigated significant impacts. Mitigations proposed in the Draft PEIR for listed species rely on a nine-quad search of CNDDB (California Natural Diversity Database) and a voluntary site visit by a Project Coordinator, but there is no discussion of the scientific qualifications of the coordinator, any acknowledgement that CNDDB is not a complete database, or any discussion of how site surveys are to be conducted, if at all. **Prior to proposing any fuel management treatments in California, there needs to be a basic understanding of the ecology of specific vegetation types. Individual project planning must first include protocol-level, site specific surveys and consultations with the regulatory agencies before treatment designs are considered. Botanical surveys must be conducted in accordance with the California Department of Fish and Wildlife (CDFW) "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities" (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline). If fuel management is to be proposed, we recommend that the currently recognized authority on California vegetation, *A Manual of California Vegetation. Second Edition.* (John O. Sawyer, Todd Keeler-Wolf, and Julie M. Evens. 2009. California Native Plant Society, Sacramento, CA) be used as the reference for describing vegetation types and how they may be treated under a VTP.** The Manual of California Vegetation has been adopted as the standard vegetation classification by State and Federal agencies. It describes vegetation types by dominant species and includes sections on fire characteristics and other natural processes that shape the ecology of each type, regional distribution information, and the rarity ranking of imperiled natural vegetation.

2. The VTP rightfully includes statements describing fire as a natural element in California ecosystems and how naturally occurring wildfires and burning by Native Americans have been instrumental in defining the California landscape. The document states that "restoring native, fire-adapted ecosystems can increase ecosystem resiliency to wildfire, drought, and potentially climate change" (Chapter 2, page 2-11). However, the document fails to define "ecosystem resiliency", especially under changing climate regimes, and is not based on an ecological approach to vegetation management, but

instead on one of vegetation structure manipulation, which may or may not result in ecosystem resiliency. In some cases, for example, Bishop pine forest, ecosystem resiliency may mean that trees are allowed to burn under extreme conditions that consume a mature stand and facilitate new seedling establishment (a stand replacement fire). For other coniferous forest types on the north coast, for example coast redwood, the document fails to adequately address how timber management practices have created unnaturally extreme fire conditions by producing younger, often even-aged stands that are more readily consumed by fire. A recent paper by Stephens, et. al. (Stephens, S. L., B. M. Collins, E. Biber, and P. Z. Fulé. 2016. U.S. federal fire and forest policy: emphasizing resilience in dry forests. Ecosphere 7(11):e01584. 10.1002/ecs2.1584) discusses the need for change in US Forest Service policies toward planning and implementation that increases resiliency in forest habitats by restoring natural ecosystem processes and promoting late seral characteristics. The same argument can be applied to State regulated and private forests that are managed for timber under the Forest Practice Rules. **We recommend that the VTP Draft PEIR define "ecosystem resiliency" for each vegetation type, and take more of an ecological approach to determining vegetation treatments in general. Specifically, we also recommend that the VTP Draft PEIR include a section on how the Forest Practice Rules may be changed to provide for long-term ecological recovery of native forests in relation to wildfire effects and timber management.**

3. The VTP Draft PEIR includes ecological restoration as a management component, but does not provide vegetation-specific ecological information, and limits this treatment to areas outside of the wildland urban interface (WUI) and fuel break treatment areas. If an objective is to restore ecosystem resiliency to wildfire, then having a thorough understanding of each particular vegetation type is critical to determining an appropriate treatment regime, whether it be in an area designated as "ecological restoration" or "WUI". **Treatments should be designed for site specific ecological conditions, and in some instances, it may be more appropriate to allow the vegetation to burn without suppression.** Successful ecological restoration for one vegetation type may actually require that a dense understory be allowed to develop, especially in moist coastal areas. In another vegetation type, allowing a mature forest to develop, then allowing it to burn in a stand-replacement fire (Northern bishop pine forest, for example) may be the best ecological restoration strategy, whether it be in or outside the WUI.

4. Mitigations proposed in the VTP Draft PEIR that specify avoidance of individual listed plant species, and/or narrow buffers (minimum of 15 feet) around the species are not adequate to protect the long-term viability of rare plant populations. Often, the ground and vegetation disturbances that occur from manual and mechanical treatments in and around intact rare vegetation types and special status species can cause ecosystem-level changes by disrupting favorable environmental conditions such as shade, moisture regimes, and mycorrhizal associations. Similarly, treatments within rare vegetation types must be based on site-specific ecological conditions, including the fire adaptions of the species occurring within those communities. **Site-specific evaluations by qualified botanists and ecologists are needed prior to determining the type of vegetation treatment that should be applied and where, or whether all treatments should be avoided. The focus should be on restoring and protecting intact functioning ecosystems and the processes necessary to maintain those systems.**

5. Many of the mapped fuel break treatments within Appendix A.2.1 for the Klamath North Coast Bioregion are inappropriately placed and if implemented, the proposed treatments would have significant, unnecessary impacts on rare biological habitats. If fuel break treatments are implemented as mapped on the Mendocino Coast, mature native trees could potentially be removed within the State Parks and within the Coastal Zone (the Mendocino County Local Coastal Plan regulates the removal of mature trees that are not regulated under timber harvest plans). If such obvious errors in mapping are readily visible on the Klamath North Coast Bioregion maps, can we assume that such errors in mapping occur throughout all bioregions? For example: a fuel break (shown as a grey line) is drawn where there are no roads or ridgetops within the Inglenook Fen, a highly rare wetland community that supports numerous rare plants within the Inglenook Fen-Ten Mile Dunes Natural Preserve of MacKerricher State Park. Not only is the fen a wetland that would not likely burn, it is primarily surrounded by open sand and coastal dune habitat. Other examples of inappropriately placed fuel breaks are those that are shown within old growth redwood forests of Hendy Woods State Park, and the Mendocino Coast Pygmy Cypress Forests at Jug Handle State Natural Reserve, Russian Gulch and Van Damme State Parks. As discussed below, ground disturbance and related vegetation clearing within pygmy forests would result in permanent impacts that could never be fully mitigated. **We recommend that, if fuel breaks (and other vegetation treatments) are to be proposed, that more accurate maps be presented, and that site-specific evaluations be used to help determine treatment locations. CEQA requires that accurate project treatment maps be included in environmental documents so that reviewers may determine where potential impacts will occur.**

6. The VTP Draft PEIR does not include discussions of rare vegetation types. The California Department of Fish and Wildlife (CDFW) website provides the official list of natural vegetation communities (https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities/List). CDFW considers vegetation community alliances described under the Manual of California Vegetation, Second Edition (MCV) with State ranks of S1-S3 (limited occurrences and distribution and under threat), and all associations within them to be highly imperiled. **These rare vegetation types that were omitted from the VTP must be included for analysis under CEQA for potential impacts, impact avoidance measures, and mitigations.**

Specific comments for rare vegetation types found on the Mendocino Coast:

Within coastal Mendocino County, there are approximately 30 natural vegetation types that are ranked at S1-S3. The list below is a subset of those 30, and are presented as examples of CDFW recognized rare vegetation types that would likely be impacted by the proposed VTP (note that those types not listed should not automatically be considered unaffected). Global and State rarity rankings are given beside the vegetation names below, and both the MCV and old Holland Classification (HC) names are used when applicable. [1] Information regarding fire characteristics that is provided in the discussion under the vegetation types was mostly obtained from MCV.

1. ***Hesperocyparis pygmaea* (Mendocino pygmy cypress woodland) Alliance G2 S2 in MCV**
   Mendocino Pygmy Cypress Forest G2 S2.1 in HC
   This is a highly unique and rare vegetation type that supports numerous special status plant species, and is very limited in distribution, with only about 2,500 acres remaining.

[1] The process of vegetation mapping and refinement for some of the vegetation types described in the Manual of California Vegetation, especially for the north coast, is still in progress, and no recent surveys have been made of old CNDDB natural community occurrences. CDFW states: *"We think it imprudent to remove these elements from the CNDDB before assessing them and reclassifying them in terms of the currently accepted state and national standards for vegetation classification. In the meantime, we continue to include those "non-standard" CNDDB NC elements in the current Natural Communities List."* https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities/Background

It occurs solely on three distinct flat terraces at approximately 300, 425, and 650 feet in elevation; soils are nutrient-poor and extremely acid (pH 2.8 to 3.9), poorly drained, and often underlain by an iron-cemented hardpan that inhibits root penetration. Soils are between saturation and field capacity moisture in summer and saturated in winter when ponding commonly occurs (Sholars, T. and Clare Golec 2006. Mendocino Pygmy Cypress Forest. unpublished paper). The pygmy forest is fire adapted with many species either reseeding readily from serotinous cones or resprouting after burning. Much of the Mendocino Pygmy Cypress Forest is contained within the area designated for WUI treatments under the proposed VTP Draft PEIR, and fuel break lines are shown on the maps. Such treatments would decimate this vegetation type, as any ground disturbance resulting from fire lines or fire breaks would impact the thin soil horizon, negatively affecting drainage and potentially puncturing the hardpan. **Wildfires that may occur in the Mendocino Coast Pygmy Cypress Forest should be allowed to burn; suppression activities should only occur well outside of the forest. Given the moist environment, any wildfire that occurs will likely be low in intensity and result in a mosaic of burned and unburned areas. Any management actions considered for the Mendocino Pygmy Cypress Forest should first be discussed with a local scientific authority on pygmy forest ecology.**

2. ***Pinus muricata* (Bishop pine forest) Alliance G3 S3 in MCV**
   Northern Bishop Pine Forest G2 S2.2 in HC
   Much of the *Pinus muricata* vegetation type on the Mendocino Coast is composed of older, even-aged stands that are diseased and dying. It is considered a stand replacement forest, as bishop pines are relatively short lived, readily produce seed from cones that are opened with heat, and periodic crown fires are critical in regenerating stands. Bishop pines do not survive well after understory burns since the roots are relatively shallow and grow within the thick duff layers that accumulate beneath the canopies. The management of this vegetation type is problematic on the Mendocino Coast, as private development is often interspersed within the forest. This is another vegetation type that is mostly designated for WUI and fuel break treatments in the VTP Draft PEIR. However, much of the forest is also contained within the California State Parks along the coast; management for forest restoration and long-term resilience is currently being planned and will be implemented under a large grant that was recently awarded to parks' environmental division. **We encourage the Board of Forestry to work cooperatively with the California Department of Parks and Recreation natural resource management staff (Brendan O'Neil, Senior Environmental Scientist, Sonoma Mendocino Coast District) in developing any treatments that may be proposed for Bishop pine forest.**

3. ***Abies grandis* (Grand fir forest) Alliance G4 S2 in MCV**
   Grand Fir Forest G1 S1.1 in HC
   Abies grandis is another forest species that is not well adapted to burning, as young trees have thin bark and older trees often succumb to decaying fungi after burn damage. The forest occurs in relatively mesic environments and the natural fire interval is considered to be quite long. Seedlings do establish in openings following fires and continue to grow into closed canopies because the trees are shade tolerant. Grand fir forest occurs in the fuel break, WUI, and ecological restoration areas of the proposed VTP. Understory treatments that would remove vegetation, open up and reduce moisture levels in the forest may unnaturally shorten fire intervals and negatively affect this rare forest type. **Maintaining an intact, moist understory of native species that includes an intermittent shrub and herbaceous layer is the preferred management strategy for Grand fir forest. Non-native species should be removed.**

4. ***Picea sitchensis* (Sitka spruce forest) Alliance G5 S2 in MCV**
   Sitka Spruce Forest G1 S1.1 in HC
   Sitka Spruce Grand Fir Forest G4 S1.1 in HC
   Picea sitchensis occurs in a limited area of moist forests in a narrow band along the Mendocino Coast, which is also the southernmost distribution of Sitka spruce forest. It occurs within the areas mapped for fuel breaks and WUI in the VTP Draft PEIR. The species is very susceptible to mortality from fire due to its thin bark and shallow roots. Fire intervals are very long (150 to 350+ years). Natural fire events in Sitka spruce forests are typically stand replacing, and recolonization of seedlings is typically from windblown seed originating from unburned adjacent stands. **This is another rare vegetation type in which a moist understory of native species should be maintained to prevent unnatural drying that may lead to more frequent catastrophic fires; vegetation treatments involving thinning or removal of native understory species may be inappropriate and counterproductive.**

5. ***Pinus contorta* var. *contorta* (Beach pine forest) Alliance G5 S3 in MCV**
   Beach Pine Forest G4 S2.1 in HC
   Beach pine forest occurs near the immediate coast in Mendocino County in coastal dunes, bluffs and rocky exposed headlands. It also occurs within the area mapped for fuel breaks and as WUI in the VTP Draft PEIR. Understory species on the Mendocino Coast include many natives such as California blackberry (*Rubus ursinus*) and California hairgrass (*Deschampsia cespitosa* ssp. *holciformis*), and invasive noxious weeds, including velvet grass (*Holcus lanatus*) and the highly flammable gorse (*Ulex europaeus*).

Pinus contorta var. *contorta* does not tolerate burning, as trees are readily killed and the foliage is moderately flammable. A pre-settlement vegetation analysis of pollen phytoliths was conducted on the coastal headlands within California State Parks on the Mendocino and Sonoma headlands in the late 1980's by Dr. Susan Bicknell, Forest Ecologist, Humboldt State University. Dr. Bicknell's research determined that the native vegetation community was a pine savannah of likely *Pinus contorta* var. *contorta* and *Pinus muricata* interspersed with native bunchgrass, including California hairgrass. The open understory and relatively low density of pines was attributed to burning by Native Americans, as the natural fire frequency is otherwise considered to be 150 to 350 years. **Management actions for the potential reduction of catastrophic wildfires in the Beach pine forest should focus on the removal of nonnative plants, especially the highly flammable gorse.**

6. ***Sequoia sempervirens* (Redwood forest) Alliance G3 S3.2 in MCV**
   Upland Redwood Forest G3 S2.3
   North Coast Alluvial Redwood Forest G2 S2.2 in HC
   The Redwood forest vegetation community occurs in moist coastal areas and along inland coastal river valleys that receive heavy summer fog. *Sequoia sempervirens* is an extremely long-lived species; old growth individuals can be over 2,000 years old, 8 feet in diameter, and over 300 feet tall. Cut trees readily resprout and eventually form dense circles of "second-growth" stands; cut again, "third- and fourth- growth" stands may be evident. Few actual "old growth" groves of redwoods remain on the Mendocino Coast. The only notable stands are found within the State Parks. According to the MCV, "*Fire is the principal disturbance agent in both young-growth and old-growth stands."* The thick bark of older trees often prevents fire from causing mortality and nearly all old stands show some degree of fire scars. Basal hollows created by repeated burning of older trees provides important wildlife habitat, including for sensitive species such as the Townsend's big-eared bat. Young redwoods, with their thinner bark, are sometimes killed by fires, but can resprout. Young redwood stands also have more dry litter accumulation on the ground and their microclimate is drier than that of mature redwood forests. During the 2008 lightening fires that consumed over 50,000 acres in Mendocino County, young redwoods were killed in timber harvested areas, while nearly all of the redwoods at Montgomery Woods State Natural Reserve survived, despite the fact that no suppression activities were used in the reserve during the fires. The old growth groves of Montgomery Woods simply had a much wetter microclimate due to the dense canopy of enormous trees and thick understory of ferns. The VTP Draft PEIR includes fuel breaks, WUI and ecological restoration zones where Redwood forests grow along the Mendocino Coast, including old growth groves within the State Parks and

Reserves. **Since much of the Redwood forest on the Mendocino Coast is under timber management, and integrates with other timber producing vegetation communities, such as that dominated by Douglas fir, we recommend that the Board of Forestry reevaluate how these forests are currently managed and work toward developing policies that are ecosystem-based to produce long-term sustainability and resilience in the forests (as discussed above under #2 in the General comments). For the Redwood forests that occur within parkland or other reserves, we recommend that the Board work collaboratively with California State Park natural resource managers to implement management policies that allow fire events to occur as natural processes within these ecosystems.**

7. ***Lithocarpus densiflorus* (Tanoak forest) Alliance G4 S3 in MCV**
Tanoak is a component of most coniferous forests on the Mendocino Coast, but the Tanoak forest Alliance is one in which tanoak stands dominate the landscape. Tanoaks are highly valued by Native Americans, both for acorn harvest and use of the wood and bark. Mature trees provide an important food crop and nesting and roosting habitat for numerous wildlife species. Tanoaks are hosts to a variety of fungi, many mycorrhizal associations form mutually beneficial relationships, and play critical ecological roles in maintaining forest health. Tannin produced from the bark was once used on an industrial scale for tanning leather. However, as tanoaks lost their value for commercial use, they became viewed as an obstacle to growing the more lucrative conifer species. Landscape level losses to tanoak forests have occurred as a result of widespread tree removals and herbicide use, and more recently from infestations of *Phytophthora ramorum*, the introduced pathogen that causes Sudden Oak Death. Fires kill young tanoaks, but individuals readily resprout after burning. Older trees survive light understory burning, which may be beneficial in reducing the number of young conifers that encroach upon tanoak stands. Researchers have suggested that controlled burning may also have some application in treating Sudden Oak Death, but more studies are needed (Bowcutt, Frederica 2015. The Tanoak Tree, An Environmental History of a Pacific Coast Hardwood. University of Washington Press). Tanoak forests on the Mendocino Coast occur in both the WUI and ecological restoration designated areas described in the VTP Draft PDEIR. **We recommend that, in general, treatments within Tanoak forests mimic a natural fire regime and be conducted to retain large individual trees, and in some cases, reduce competition from encroaching conifers. We also encourage more research on the use of controlled burns to treat forest pathogens.**

8. ***Baccharis pilularis* (Coyote brush scrub) Alliance G5 S5 (some associations are of high priority for inventory) in MCV**
   Northern Coyote Bush Scrub G4 S4 in HC
   Northern Coastal Bluff Scrub G2 S2.2 in HC
   Northern Salal Scrub G4 S3.2 in HC
   Northern Silk Tassel Scrub G3 S2.3 in HC
   ***Corylus cornuta var. californica* (Hazelnut scrub) Alliance G3 S2? In MCV**
   ***Rubus (parviflorus, spectabilis, ursinus)* (Coastal brambles) Alliance G4 S3 in MCV**
   Scrub and bramble vegetation types on the Mendocino Coast generally occur on the coastal headlands or as understory components in moist forests, and are shown as occurring primarily within the WUI designated areas and within areas mapped for fuel breaks. Naturally occurring fire is infrequent in these relatively mesic environments. Most of the species, including *Baccharis pilularis*, readily resprout after burning or cutting. The scrub vegetation types provide important habitat for nesting birds and other wildlife. Hazelnut scrub is an important food source for Native Americans and many native hazelnut patches are highly prized and considered to be sacred sites. **We recommend that site-specific evaluations be conducted prior to determining whether treatment is even necessary in these coastal scrub vegetation communities, or if so, the type of treatment that may be most appropriate. Removal of invasive weeds and retaining stands of scrub that are important to local tribes should be high priorities.**

9. **Native Grassland G3 S3.1 in HC**
   ***Elymus glaucus* (Blue wild rye meadows) Alliance G3? S3? In MCV**
   Coastal Terrace Prairie G2 S2.1 in HC
   ***Calamagrostis nutkaensis* (Pacific reed grass meadows) Alliance G4 S2 in MCV**
   ***Danthonia californica* (California oat grass prairie) Provisional Alliance G4 S3 in MCV**
   ***Festuca rubra* (Red fescue grassland) Alliance G4 S3 in MCV**
   Coastal grasslands that support native perennial grasses occur primarily along the coastal bluffs and occasionally within forest openings or as an understory component beneath Northern bishop pines and Shore pines. These natural communities on the Mendocino Coast occur in much of the area designated as WUI in the VTP Draft PEIR. Fuel breaks are also mapped for areas of native grassland. The native grasses also intermix with noxious non-native perennial grasses, primarily velvet grass (*Holcus lanatus*) and sweet vernal grass (*Anthoxanthum odoratum*). Many of the native grass species readily resprout following fire, however so do the non-native perennial grasses. Although the Native Americans regularly burned coastal headland grassland areas, burning prior to European occupation occurred when there were no non-native grasses to compete with the native plants. Today, when burning occurs in the same vegetation

communities, colonization or reemergence of velvet grass and sweet vernal grass poses a real threat to maintaining the integrity of the native vegetation ecosystems. Ground disturbance within these intact coastal grasslands also favors invasion by noxious weedy annual and perennial grasses. **We recommend that ground disturbance be avoided in any intact native grass vegetation community. If vegetation treatments are considered, including mowing or grazing, site-specific evaluations should first be conducted by knowledgeable botanical ecologists to determine the most appropriate strategies.**

In summary, the Dorothy King Young Chapter of the California Native Plant Society finds that the VTP Draft PEIR lacks the site-specific botanical and ecological information necessary to make conclusive determinations regarding potentially significant impacts resulting from proposed fuel management activities. The VTP Draft PEIR also fails to provide meaningful mitigation and reporting measures that could allow appropriate site-specific evaluations for future tiered projects. As discussed under the General and Specific concerns listed above, nearly all of the rare vegetation types that occur on the Mendocino Coast would potentially be impacted if the vegetation treatments were carried out as described in the VTP Draft PEIR. We urge the Board of Forestry to NOT certify the VTP Draft PEIR, and if recirculated, to completely revise the document to be based on currently recognized ecological principles and environmental assessment protocols. We request that the Manual of California Vegetation, Second Edition be used as a primary reference for identifying vegetation types and the treatments that may or may not be appropriate. Overall, we emphasize the importance of recognizing that understanding the functions and characteristics of native California ecosystems, in the context of changing climate regimes, is critical to achieving the goal of facilitating long-term resilience of native vegetation in response to wildfire.

Respectfully,

Renée Pasquinelli

Renée Pasquinelli, Conservation Co-Chair (North)
Dorothy King Young Chapter, California Native Plant Society

cc: Greg Suba, Conservation Program Director, California Native Plant Society

California Native Plant Society

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January 8, 2018

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RE: Recirculated Revised Draft Program Environmental Impact Report Regarding the Proposed Statewide Vegetation Treatment Program (VTP) November 7, 2017

Dear Edith Hannigan:

The Los Angeles / Santa Monica Mountains Chapter of California Native Plant Society (LASMM, CNPS) membership area covers the Santa Monica Mountains, western portions of the Los Angeles Basin, the San Fernando Valley west through the Simi Hills, and north to the Mojave Desert. The following are our comments on this Recirculated Revised Draft Program Environmental Impact Report (PEIR) Regarding the Proposed Statewide Vegetation Treatment Program (VTP).

<u>General Comments:</u>

This VTP is obsolete. Due to the chaotic weather patterns, powerful winds and extreme temperatures of a changing climate, prescribed fire scheduling is impossible and dangerous. Climate is changing NOW!

Natural ecosystems are being stressed to the point that "managing" the native plant alliances/native plant habitats with mastication, mechanical removal of understory and shrubs, using herbicide indiscriminately or during windy conditions, will probably irretrievably destroy these systems, with the loss of both native flora, fauna and will diminish the resources available to migratory animals. In Southern California shrub systems knit watersheds together through intricate interlacing root systems, retain groundwater and prevent erosion of unstable slopes and steep coastlines. The treatments proposed in this VTP are not protective of watershed values.

As a representative of Santa Barbara County Public Works explained to a reporter in a Los Angeles Times article (January 8, 2018) "If the watershed had not burned, there would be as much as 20 feet of vegetation cover thanks to dense chaparral that could soak up rainwater. Half an inch of rain would not even hit a person sitting under that canopy of trees. Now it hits the dirt directly and it is instant runoff and carries that sediment." This was part of a report on possible effects of heavy rain on recent wildfires in southern California. The one mentioned above is the Thomas Fire, now recorded as the largest wildfire ever in California and still not quite out.

Note: Not everyone thinks of chaparral as "shrubs". The photo below was taken today during a rainstorm in the Santa Monica Mountains . The background hillside is mixed mature chaparral. The cleared area at the bottom of the slope is a California walnut grove with the understory cleared for fuel clearance and now very weedy.. Are California walnuts “shrubs”? The foreground is mature coast live oaks. Are coast live oaks “shrubs”? Does this look like a “Rangeland”? No. This looks like a very healthy watershed.

Forestry and Cal Fire need all their budgets to fight, for the foreseeable future, large difficult wildfires and to continue to thin out beetle- and pathogen-killed trees, especially in coniferous forests.

How much of the Cal Fire-indicated “treatable area” acreage has burned in the wildfires of the last ten years? Where, in this PEIR is that acreage noted and subtracted from the treatable acreage? Those burned areas are freshly burned or are in recovery and should be monitored, perhaps restored, but not subjected to the destructive methods proposed for treating vegetation in this VTP for at least another ten years. Recent fires in Southern California , besides the record-breaking Thomas Fire are the La Tuna, Rye, Creek, Skirball to name a few. The Spring Fire occurred a few years ago in Ventura County and in part of the Santa Monica Mountains. Then there is the Nuns Fire in Sonoma and Napa Counties in Northern California. Looking at the “treatable area” maps in this VTP PEIR, it seems that most of these wildfires occurred in those “treatable areas”. This proposed VTP PEIR is too late to do any preventable vegetation management, only careful monitoring and possible restoration of native shrublands and woodlands are realistic vegetation management programs now in those burned areas. Local organizations and local Fire Safe Councils are better able to perform any of the above activities than Forestry / Cal Fire.

Why aren’t Forestry and Cal Fire working to promote and support more local Fire Safe Councils? Especially in Southern California, these councils are very important for treating and monitoring open areas and residential areas. Organizations like California Invasive Plant Council (Cal-IPC), California Native Plant Society (CNPS) and others do weeding in some of the CalFire-indicated “treatable areas”.

Wouldn’t the yearly activities of local Fire-Safe Councils and these interested organizations be more effective in reducing high wildfire hazard conditions than the VTP goal of “treating” 60,000 acres of the designated 2,300,000 acres once every 386 years?

Are there yearly reports of the work done and the areas treated, at least from the Forestry/Cal Fire-sponsored Fire Safe Councils? Are these reports part of Forestry/Cal Fire’s yearly report to the governor and the legislature?

Do Cal Fire and Forestry work with the California Department of Food and Agriculture (CDFA) to safely process the harvested material as these trees are probably in quarantine areas? CDFA requires permits and certain conditions on moving quarantined trees or other plant material and defines accepted processing of such material.

Comments on particular sections of the Recirculated Revised Draft VTP PEIR:

1. ACRONYMS AND OTHER ABBREVIATIONS:

Where is the acronym for California Department of Food and Agriculture (CDFA)? They are responsible for preventing the spread of pest- or pathogen-infested plants. Quarantine areas are declared in areas where these infestations occur. Permits are required for handling, moving the infested material out of the quarantine area, processing, storing and treating these plants. The shot-hole borer/fusarium infested trees are one example. Plant species infected with phytophthora oomycete are another.

2. GLOSSARY OF TERMS:

a. Chipping: If beetle-infested trees are chipped, the chips must be smaller than 1 inch in length or diameter to prevent the spread of fusarium. This particular chipped material may be used as mulch onsite or used in power generation facilities but, without permission from CDFA may not be sold to homeowners or garden supply stores. Phytophthora infected woodchips can be used for power generation, or otherwise sterilized.

b.Feller-buncher: If beetle-infested trees or trees infected with phytophthora are cut by the feller-buncher they may not be loaded onto trucks unless the trucks are permitted by CDFA to move these logs to a designated location where they will be sterilized or destroyed.

c. Mastication: If the mastication equipment is working around beetle-infested trees or some of the many species of shrubs and trees infected with phytopthora the cut material probably should be sterilized or pile-burned. The equipment and workers' tools and boots will have to be sterilized after use in such areas. CDFA can provide more definite information on end uses for this material.

3. E.6 ALTERNATIVES ANALYZED

a. No Project – This alternative is stated to be a continuation of the current Vegetation Management Program which is essential non-functional in the current chaotic climate change weather conditions. There is no way to predict reliably when prescribed burns could take place, or whether burning is wise in highly-stressed native or non-native forestlands, grasslands or shrublands.

b. Proposed Program – This alternative still involves the use of vegetation management methods that generally will be damaging to the areas treated, not easily controllable in current unpredictable wind and weather events, and will not cover enough acres in the State to make a significant difference to the frequency of wildfires now occurring in the State. The phrase "enhancing fire resiliency through ecological restoration" is not reassuring since "ecological restoration" in this document seems oriented toward business interests such as timber harvesting, grazing, and industrial / residential environments, not preservation and restoration of native chaparral, coastal sage and desert shrublands even though many of these species are fire resilient.

c. Alternative A: WUI Only – This alternative is already handled by local fire authorities, local jurisdictions, homeowner associations and Fire Safe Councils in most Wildland-Urban residential areas in Southern California. Does Cal Fire get yearly reports on the WUI acreage monitoring and fuel clearance data? If not, why not? Alternative A does not require necessarily State-level involvement, if the local people are doing their job.

d. Alternative B: WUI and Fuel Breaks – See above for the work done by locals in WUIs. Maps of possible fuel breaks in Southern California are so full of errors as to be useless. Unless Cal Fire has more accurate maps and onsite information, planning fuel breaks where there are streets, houses, already built fire roads and fire breaks, and trespassing on federal lands or California University Reserves or the occasional industrial and business centers would not be a good idea.

e. Alternative C: Very High Fire Hazard Severity Zone – This alternative is already totally out of control. Cal Fire cannot treat enough of these acres per year to affect the wildfire frequency now upon us. The best Cal Fire can do is to restrict treatment activities to the forest lands with the many dead or dying trees. Concentrating on the forests is, at this point in time, the best use of the Vegetation Treatment Program.

f. Alternative D: Treatments that Minimize Potential Impacts to Air Quality – This alternative would not use prescribed fire as Cal Fire's preferred treatment in order to minimize potential health and environmental impacts. Since climate change is making it all but impossible to carry out a "prescribed" burn, that is an excellent idea. Using hand or controlled herbivory might work better. Pile burning might be required with some of the infested/infected trees in the forest, however.

4. E.7 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES: TABLE ES-1:

a. Aesthetics and Visual Resources: Significant and unavoidable due to loss of perennial and annual flower species seed banks and chaparral trees and shrubs of many shapes and sizes with bright flowers, berries and other fruits throughout the year. Most of the methods proposed will rip these plants out by the roots, burn them up, tear them up and harrow the soil to destroy their seed banks.

b. Air Quality: In Southern California any extended smoke episode causes serious air pollution problems. With uncertain wind and temperature as climate changes, stagnant air will be as bad as winds if prescribed burns get out of control. Significant and unavoidable environmental impacts in this time of unpredictable weather.

c. Biological Resources: The information in Appendix B: Biological Resources has absolutely nothing to do with biological resources. What does a section on VTP Water Drafting Guidelines, a large number of microscopically small print data-filled tables on the living styles (below ground, ground level, trees and shrubs) of multitudes of unidentified species, and the Cal IPC manual on BMPs for land managers for "Preventing the Spread of Invasive Plants" have to do with specific native plant species and native animal species affected by the proposed treatments of this VTP?

If the onsite treatment kills the species, what difference does it make if the VTP uses special pipes and keeps the water clean?

What difference does it make to list the locations of where a large number of unidentified species live if every description ends with "some will die, but maybe a few will survive"?

Where are the native plant species identified, number of listed native plant species affected by VTP treatments in "treatable areas" around California?

Including the Cal IPC manual "Preventing the Spread of Invasive Plants" in Appendix B makes it clear that this document is not interested in the world-renowned native biodiversity of plant species in California, but only in the mechanics of disturbing and perhaps destroying some aspects of this biodiversity.

According to the tables of animals' living styles, there are significant and unavoidable environmental impacts if VTP methods are used.

d. Climate Change / Greenhouse Gas: Page E-2: "The impacts of climate change suggest a continuing and even accelerated risk from wildfire." "These future climate scenarios combined with continuing projections of residential growth into the wildland suggest that ensuing wildfire-related problems are poised to become even larger in the near future."

The future is NOW. Wildfires are doing what the VTP treatments were supposed to do, but on a larger scale. Significant and unavoidable impacts are occurring every year. The best VTP is to actively promote Fire Safe Councils and require yearly reports of the acreage they monitor and maintain. Fire and forestry personnel can mitigate the effects of climate change by working to thin beetle/fusarium-killed trees in the coniferous forests and by doing their best fire-fighting efforts to keep down the acreage now being lost due to climate change causing severe weather and wind conditions.

Large acreage is now burned by these wildfires reducing the need to treat those acres for years to come. Greenhouse gas emissions are large as well during the wildfire, but the carbon sequestered in all those buried root systems is still there, perhaps to regenerate root sprouts—an unintended preventative mitigation to mastication and mechanical treatments proposed by the VTP. Current and future conditions will cause significant impacts that may be mitigatable.

e. Geology, Hydrology, Minerals and Soils: Appendix C: Geology, Hydrology and Soils: Again, this is a general discussion of geology, etc. aimed at timber harvesting that does not address geological problems with watersheds, groundwater, coastal bluff stability or any issues concerning chaparral, coastal sage scrub, or desert habitats. There are three published essays: Factors Affecting Landslides in Forested Terrain, Guidelines for Engineering Geologic Reports for Timber Harvesting Plans, and California Forest Practice Rules. Where is the information on factors affecting landslides in chaparral, coastal sage scrub and desert lands? Where is the information on preparing engineering geologic and soils reports for chaparral, coastal sage scrub and desert lands? Does Cal Fire or Forestry have any California Shrublands and Desert Lands Practice Rules? From the material in this PEIR, the assumption seems to be the only good shrub is one pulled out by its roots and chopped up for mulch. Appendix C has no connection with most of Southern California. Where is any information on environmental impacts to anything but forest lands?

Table ES-1 is full of unsupported and unwarranted assumptions. There are significant and unavoidable environmental impacts from this proposed VTP PEIR.

5. E.9 SIGNIFICANT AND UNAVOIDABLE ENVIRONMENTAL IMPACTS:

In shrublands the VTP treatments using prescribed fire, mechanical ripping up of the ground and mastication would irreversibly affect many ground or underground dwelling biota, as well as tree-dwelling or tree-nesting birds, and the seed banks and root systems of many perennial and annual native plants as well as causing, by removing large root systems and shrubs from watersheds, causing hydrophobic soil conditions, high risk of erosion and loss of groundwater retention ability. If applied to desert shrublands, significant loss of soil stability and resultant severe sand storms would occur as well as loss of listed animals that depend on desert native plants for food. These are significant and unavoidable environmental impacts from the use of those VTP treatments.

6. K. HYD-16 PROCEDURES FOR COMPLYING

a.Table K.1. Disturbance coefficients to be used for HYD-16 is used to calculate the potential of disturbance from different fuel treatment activities and logging systems (required by Calwater Planning Watershed) times the combined acreage where VTP activities are proposed. However, when considering the impact of these different treatments on non-logging sites, the table coefficients seem skewed toward more severe impacts on logging treatments and mild impacts on Fuel Treatments for shrublands and grasslands. See below, with proposed changes based on actual impacts of the various Fuel Treatments. Those changes are more realistic for shrublands in watershed and groundwater retention areas.

Table K-1. Disturbance coefficients to be used for HYD-16.

General Activity	Specific Activity	Per Acre Disturbance Coefficient
Fuel Treatment	Prescribed Fire	0.16 **(change to 1.0)**
Fuel Treatment	Burn Piles	0.08
Fuel Treatment	Mechanical	0.5 **(change to 1.0)**
Fuel Treatment	Hand Treatment	0.08
Fuel Treatment	Herbivory	0.08 **(change to 0.5)**
Fuel Treatment	Herbicide	0.08 **(change to 0.5)**
Logging	Clearcut	1
Logging	Shelterwood/Overstory Removal	0.75
Logging	Selection	0.5
Logging	Commercial Thinning	0.5

b. Prescribed fire destroys or seriously disrupts the complex nesting, resting and feeding of the myriad of species living in the shrubland habitats as well as the pattern of the shrubs in sequestering carbon , supplying water to their leaves and stems, maturing and casting their seeds, nuts and fruits into what? a layer of ashes?

In the very least prescribed fire injures plants at a time when they are recovering from long dry spells of spring and summer and delays the ability of the plants to put out new growth and increase their root system, because the plants are required to spend time repairing fire damage to their canopies, losing scorched fruit that had not yet ripened, healing scorched root collars and, for some plants, using energy to produce root sprouts. The HYD-!6 cosfficient should be **1.0** , the same as the effects of a logging clearcut.

c. Mechanical treatments in which heavy machinery plows up low-growing plants, young shrubs, perennials, whether weeds or native plants, and may dig up mature native shrubs and their roots, essentially destroy the shrub habitat, releasing all the sequestered carbon in their root systems, destroying rodent and reptile tunnels, cover for ground-dwelling and ground-nesting birds like mourning doves, California quail, etc. Don’t forget that many species of rodents are essential to maintaining underground seedbanks, plus the manure to fertilize those seeds so the native shrubs can germinate anew when the mature plants are lost. This disturbance, by removing the entire plants and digging up the site, is 100% fatal to the life on the site. The HYD-16 coefficient should be **1.0.** Is your main goal to create grasslands (with non-native grasses) to graze methane-emitting cows in areas where no ranching has occurred for perhaps a century? Or is this an attempt to wreck our watersheds, since most chaparral and coastal sage scrub grow on steep erodible slopes and, through extensive root systems and durable canopies, are the main stabilizing factor on those slopes? See photo of chaparral along a powerline service road. A roadscraper shaved off the bank along the road. Subsequent rains washed the loose soil from the intricately woven different root systems of the many species of native ferns, perennials, shrubs and trees.

d. Herbivory can damage native shrubs and eat young shrubs completely if not tended closely. We have seen goats eating young oak leaves off coast live oaks and sampling many native perennials. If the site is mostly native plants, there is a good possibility of partial or permanent damage to the habitat. As in “commercial thinning” of logs, herbivory is a tool for thinning of shrub habitat and should have a HYD-16 coefficient of **0.5.**

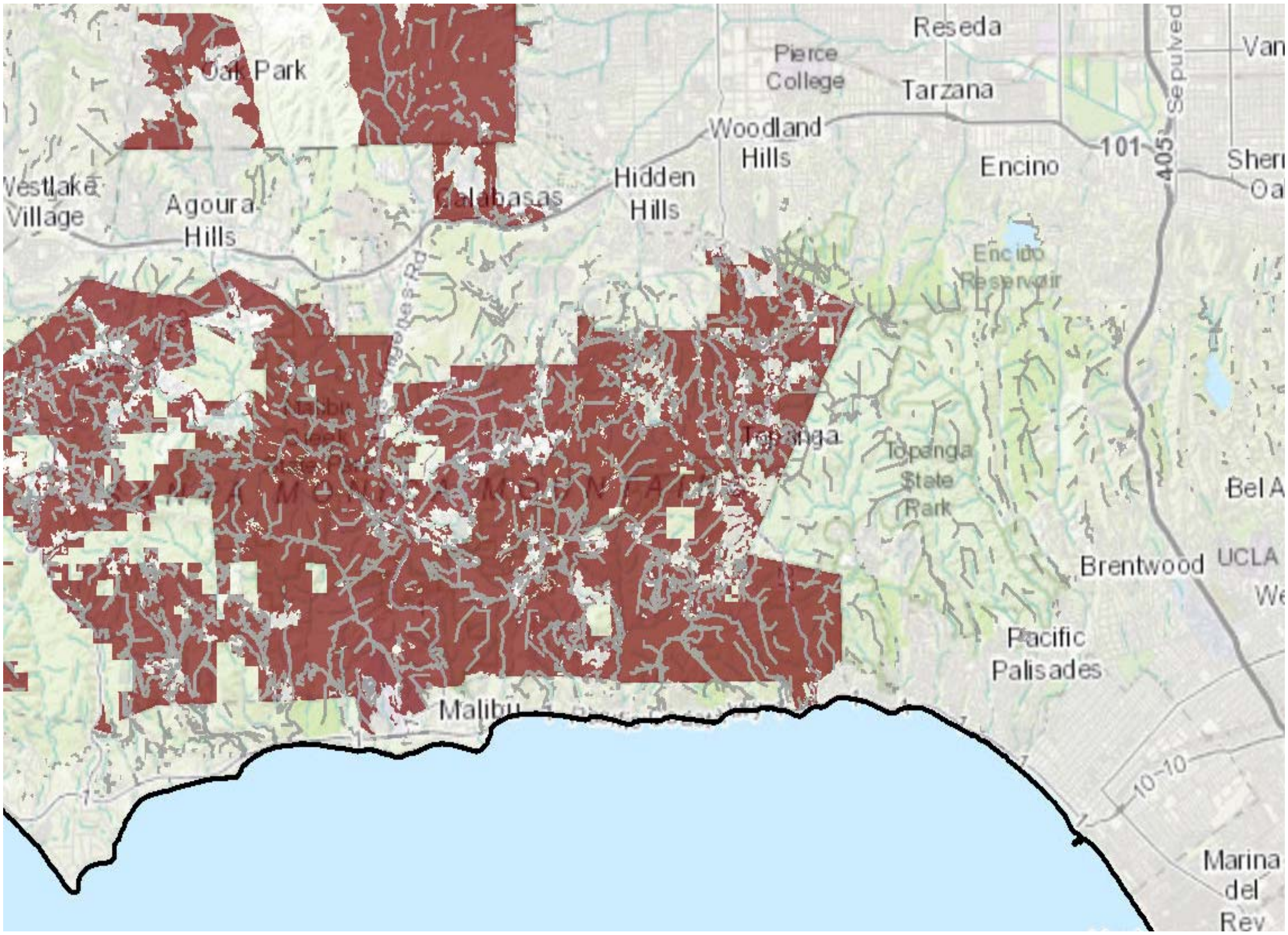
e, Herbicide is a useful tool when used carefully on individual plants, but not when it is used in broadcast spraying. We have seen the results of broadcast spraying in damage to canopies of mature oaks and loss of ceanothus canopies, causing the death of those shrubs – all to kill grass growing on a steep slope. Much erosion followed. So, for broadcast herbicide spraying the HYD-16 coefficient should be **0.5** as another thinning tool like “commercial thinning” in logging or **1.0** if the applicator is careless.

See photos below of a chaparral slope broadcast-sprayed with herbicide on a mildly windy day. The spray killed the groundcover and two or three ceanothus, damaging part of the canopy of a mature oak tree down by the road (on the left). The ceanothus took about a year to die. Then there was a rainy winter and part of the destabilized slope collapsed down into the wet streambed beside a house.

Shortly after the herbicide spraying. Note the dying canopies and bare ground.

The photo on the left shows the slope failure (the dark line running down the slope). The photo on the right is behind the house showing how much mud came down. Fortunately the slope slid down behind the house. Mountains Recreation and Conservation Authority was responsible for the spraying and did come and clear out the mud and debris.

7. a. Appendix A.2.9 Treatment Area



PART OF SANTA MONICA MOUNTAINS FROM POINT DUME EAST TO THE 405 FREEWAY
(Appendix A.2.9 South Coast)
Grey is Modeled Fuel Break Treatment Area
Tan is Modeled Ecological Restoration Treatment Area
Red is Modeled WUI Treatment Area

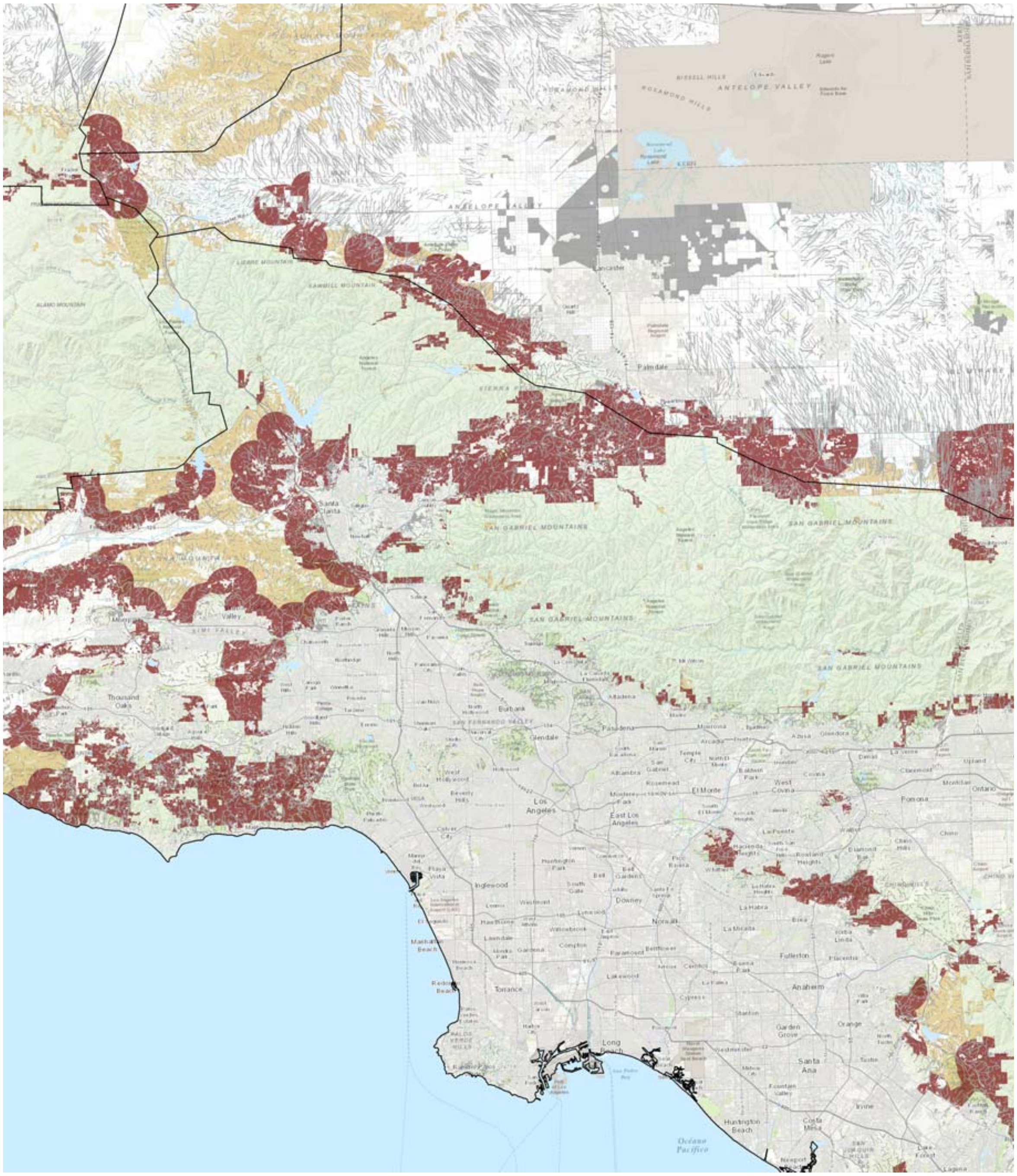
Why so many Modeled Fuel Break Treatment Areas and why are they so fragmented?
There are many well-established fuel breaks/fire roads in the Santa Monica Mountains, but these fragmentary grey lines do not seem to correspond to them—or only partially.

Why is Santa Monica Mountains National Recreation Area included in the Modeled WUI Treatment Area and the Modeled Fuel Break Treatment Area?. Doesn't the VTP respect federal lands? Where are the land trusts, UCLA Reserve, and Santa Monica Mountains Conservancy properties on this map?

Why aren't all the 1000+ houses in Mandeville Canyon above Brentwood and all the residences in Mountaingate north of Brentwood and above the west side of the 405 part of Modeled WUI Treatment Area?

These are just a few examples of the inaccuracies of these maps. Please get more accurate information.

7. b. Appendix A.2.9 Treatment Area



LOS ANGELES COUNTY
(Appendix A.2.9 South Coast)
Grey is Modeled Fuel Break Treatment Area
Tan is Modeled Ecological Restoration Treatment Area
Red is Modeled WUI Treatment Area

Why all the red areas around the Santa Clara River and the San Andreas Fault in the western area of Los Angeles County? These are L. A County Significant Ecological Areas protecting listed wildlife, plants and habitats. So is Puente Hills and the Rio Hondo College Wildlife Sanctuary (red area to right of city center),

See the map of Significant Ecological Areas on the next page. How many are in “treatment areas”?

Significant Ecological Areas and Coastal Resource Areas Policy Map

Figure 9.3

There are a number of serious problems with this Recirculated Revised Draft VTP PEIR. Questions and comments from the last draft VTP PEIR have not been answered, except with a formulaic answer that the program will take care of all the concerns of commenters – no details given. Biological information was mediocre or not supplied. The Appendices, which usually are the project research reports, consist mostly of copies of booklets or textbooks on basic geologic failures, handling invasive plants, simplistic biological information, generic rules for handling herbicides and pesticides, every answer very general and non-specific, except where coniferous forests are concerned.

CEQA requires definite answers.

The overall impression given Southern California and the Deserts is that the land might be useful for grazing if the shrubs were removed. Almost all the photos in this document were of forested lands because that is the main interest of Cal Fire and Forestry. Southern California understands the value of shrublands in protecting our watersheds and groundwater supplies. We do not need more ranching in Southern California. We need water.

The best Vegetation Treatment Program for Cal Fire and Forestry would be to concentrate on solving the problem of all the dead /diseased trees in the forests, fighting wildfires as efficiently as possible and encouraging local Fire Safe Councils, jurisdictions and environmental organizations to continue monitoring their home wildlands, judiciously pruning, weeding, restoring WUIs where necessary and educating and encouraging their neighbors to do likewise. This draft VTP PEIR is outmoded and unworkable.

Sincerely,

Snowdy Dodson
President
Los Angeles / Santa Monica Mountains Chapter
California Native Plant Society

Toyon (*Heteromeles arbutifolia*)
Fire Resilient Chaparral Tree

CALIFORNIA NATIVE PLANT SOCIETY

Marin Chapter
California Native Plant Society

January 11, 2018

VIA U.S. and Electronic Mail
Board of Forestry and Fire Protection
ATTN: Edith Hannigan, Board Analyst
VTP Draft DEIR Comments
PO Box 944246
Sacramento, CA 94244-2460
VegetationTreatment@bof.ca.gov

Re: Draft Programmatic Environmental Impact Report for The Vegetation Treatment Program of the California State Board of Forestry and Fire Protection

Dear Ms. Hannigan:

The Marin Chapter of the California Native Plant Society (Marin CNPS) appreciates the opportunity to comment on the Draft Programmatic Environmental Impact Report for the Vegetation Treatment Program of the (DEIR or VT program) proposed by the California State Board of Forestry and Fire Protection (CAL FIRE). We also support the comments submitted by the Endangered Habitats League and are submitting these separate comments in order to focus on the particular circumstances of Marin County.

Marin CNPS recognizes the importance of an effective fire prevention strategy for the State of California, the need to remove fire hazards and CAL FIRE's important role in implementing this strategy. Some of the factors that are making California more fire prone such as the invasion of fuel dense exotic plants also threaten California's native plant communities. To the extent possible, fire prevention strategies should seek a win-win result of also helping preserve and conserve California's precious and unique native plants and avoid further damage to them.

Marin CNPS supports efforts to preserve and conserve native plant habitat and federally- or state-listed flora and fauna. Commenting on vegetation management plans for Mount Tamalpais region over a quarter century ago, we supported fire-safe landscape around structures. Recent research shows that the defensible space border between wildland and urban areas remains the critical area for vegetation management.

One of the features that makes Marin County unique is Mount Tamalpais. Its rapid ascent from seashore to a mountaintop of over 2500 feet provides numerous microclimates that support a great diversity of native plants and native plant communities. Mount Tamalpais and adjoining mountains, hills and riparian slopes and valleys are home to many special status native plants and sensitive natural communities. The ability of the Marin County landscape to support rare plants is enhanced by numerous serpentine outcroppings that help to protect these plants from others that could outcompete them.

The known flora of Marin County now exceeds some 1350 species - (about 25% of the flora of the State of California). Mount Tamalpais alone has about 851 taxa; 75 species are found only on Mount Tam. Marin County is a north-south crossroads for many plant species: 97 species reach their southern limit in Marin, and 34 reach their northern limit. 51 (of the 97) species reach their southern limit on Mount Tam and 12 (of 34) reach their northern limit. Some 20 taxa are endemic to Marin, nearly half of which occur only on Mount Tam.

Much of the land on Mount Tamalpais and surrounding areas that contains this highly diverse flora is already protected. Beginning in the Marin Headlands the Golden Gate National Recreation Area (GGNRA) flows northward along the coast until it joins the Point Reyes National Seashore which as federally protected land is not subject to this DEIR. Most of Mount Tamalpais and natural lands to its north are under state or county protection: Mount Tamalpais State Park, Marin Municipal Water District, Marin County Parks and Open Space, Samuel P Taylor State Park, Tomales Bay State Park, and privately-operated Audubon Canyon Ranch. All of these protected lands are included within the United Nations Golden Gate Biosphere Reserve. This United Nations designation reflects the national and worldwide uniqueness and rarity of the Marin County natural environment.

The DEIR has placed most of this state and county protected land in a huge WUI zone designated for extensive vegetation treatment programs. Rather than focusing on the creation of defensible space primarily at the intersection of wild land and urban areas, the DEIR proposes vegetation treatment throughout the whole zone, including most ridgelines. Thus, the DEIR has chosen the most destructive course for Marin County's unique and precious native plants and natural communities.

1. FROM THE CURRENT DEIR IT IS IMPOSSIBLE TO DETERMINE THE IMPACT OF THE PROPOSED VTP ON THE PROTECTED FLORA OF MARIN COUNTY.

Virtually every ridgeline on Mount Tam and then northward through the core of the county to the Sonoma County line appears designated for a vegetation treatment project. And this DEIR makes every slope of Mount Tam eligible for a vegetation treatment project. DEIR, Appendix_a.2.4_bayareadelta_treatmentareas_arche. The selection of ridgelines was not based upon a fire prevention analysis specific to Marin County, but rather used a mapping program that appears to have identified virtually every ridgeline in the State Responsibility Area (SRA) as a candidate for a fuel break.

There is no way to rationally respond to the identification of virtually every ridgeline located in the SRA in Marin County as a potential vegetation treatment project. The DEIR describes neither the location of the specific projects that will be conducted under the DEIR nor the vegetation treatment methods that will be used in any project: prescribed fire, manual activities (i.e., hand crew work), mechanical activities, prescribed herbivory (targeted beneficial grazing), or targeted ground application of herbicides.

Most of Marin County's special status plant species and sensitive natural communities, not within federally protected lands, are included in the areas proposed for vegetation treatment. Marin Municipal Water District (MMWD) which appears completely within the VTP area is a case in point. MMWD land is an example of the richness and diversity of Marin County's flora. Fifty taxa of special-status plants have been documented as occurring or potentially occurring on MMWD lands. A total of 59 alliances and 88 associations have been identified in the Classification of Vegetation Associations from MMWD's Mount Tamalpais Watershed, Nicasio Reservoir, and Soulajule Reservoir. Of those, 11 associations were assigned globally rare rankings (G1 or G2) under the Natural Heritage Assessment Methodology. Other "important" or "high-quality" habitats on MMWD lands include oak woodlands, maritime and serpentine chaparral, native grasslands, and old-growth redwood forests. Marin Municipal Water District Draft Biodiversity, Fire, and Fuels Integrated Plan (September 15, 2016), pp. 2-15.

The DEIR proposes vegetation treatments, including fuel breaks and other vegetation management, for areas of Marin County that are rich with special status species and sensitive plant communities. The DEIR completely ignores the presence of these plants and these communities except in the most generic terms. And the DEIR contains no discussion of possible specific impacts to potentially affected specific special status plants and sensitive plant communities of Marin County. Nor does it consider any specific avoidance or mitigation measures applicable to the effects of proposed vegetation treatments.

Essentially, the VTP is not a plan; it is a huge wish list, with all the important planning and environmental impacts left to a future day. Because it is not a specific plan, there is no way to tell what the environmental impacts on special status plant species and sensitive plant communities would be or what avoidance measures or mitigations may be necessary. This does not comply with CEQA.

How is this generalized DEIR relevant for Marin County's complex vegetation and microclimates?

2. THE CURRENT DEIR IS A CATCH-22: IT PROVIDES NO WAY TO DETERMINE ENVIRONMENTAL IMPACTS NOW; AND WHEN ENVIRONMENTAL IMPACTS ARE KNOWN, IT PROVIDES NO PROCEDURE FOR PUBLIC REVIEW AND COMMENT.

We have discussed above the failure of the DEIR to provide sufficient information to conduct an informed environmental review of vegetation treatment programs whose location and method is currently unknown. Given that lack of current information, one would expect that there would be an opportunity to review and comment upon actual vegetation treatment programs proposed for a specific location with a specific treatment method. However, the DEIR is explicit about its intention to avoid any subsequent CEQA review: "This VTP replaces the existing costly, time consuming, and repetitive process of preparing multiple CEQA documents for projects located in forested fuel types." DEIR 2-37. (The comment is applicable to all projects under this DEIR since it contrasts the current process of preparing CEQA documents for specific projects located in forested fuel types with the lack of subsequent CEQA review proposed by this DEIR.)

Rather than provide subsequent CEQA review, the DEIR proposes that when the location, scope and impact of a vegetation project is known, the CEQA coordinator, an agency employee, be given the "final determination" on CEQA issues. DEIR, 2-37, 2-46. In making that "final determination" the CEQA coordinator is supposed to operate within the fiction that this DEIR actually evaluated the treatment activities to be used and actually addressed the effects of those activities on protected botanical resources:

> "If it is determined that the proposed VTP subsequent activity includes treatment activities that are substantially different from those evaluated in the DEIR or that

> the VTP subsequent activity may result in one or more new significant effects not addressed in the DEIR, the following actions may be taken:" DEIR 2-46

Thus, the CEQA coordinator is to assume that this DEIR actually "evaluated" the treatment activities to be used and actually "addressed" significant effects on special status plants and sensitive natural communities of that project.

One of the triggers for subsequent CEQA inquiry by the CEQA coordinator is if the "treatment activities are substantially different from those evaluated in the DEIR." DEIR 2-46. The DEIR does describe possible treatments; what it lacks is any reasonable evaluation of their effects on botanical resources in a specific project area. On its face this standard would permit a CEQA coordinator to look no further if the proposed treatment is one of the ones identified in the DEIR: prescribed fire, manual activities (i.e., hand crew work), mechanical activities, prescribed herbivory (targeted beneficial grazing), or targeted ground application of herbicides. Simply put, if the treatment is one of the ones described in the DEIR, this test is met.

The second trigger for subsequent CEQA inquiry by the CEQA coordinator is if "the VTP subsequent activity may result in one or more new significant effects not addressed in the DEIR." DEIR 2-46. In this case the subsequent activity may be changed to avoid the potential significant effect or additional CEQA review can be ordered. However, there are no standards for making these determinations. Nor is there any public review of the integrity of this decision-making or whether it is fact-based or based on some other considerations. Since this DEIR asserts that it has addressed all significant environmental effects, the likelihood of a CEQA coordinator finding that new effects are present appears slim. It also appears equally slim that a CEQA coordinator would propose additional CEQA review at the project stage since the DEIR is set up to discourage this. And there is no public review of a CEQA coordinator's determination to place her stamp of approval on a project, not conduct additional analysis or not recommend additional CEQA review.

Moreover, the DEIR is designed to discourage agency staff from conducting a thorough review of the effects of specific vegetation treatment projects on botanical resources. The DEIR makes the point of calling for the project coordinator to conduct only a "brief review" concerning special status species and sensitive natural communities with the project contractor. DEIR, ADM-1, 2-49. This sends a message to CEQA coordinators to not slow projects down with botanical surveys, research and reviews that may be needed to identify the presence of special status plants and sensitive natural communities, the potential adverse effects of the project on them and needed mitigations and avoidance measures.

In addition, issues of impact on sensitive species and communities and avoidance and mitigation that are required by CEQA to be specifically covered in an EIR are relegated by this DEIR to a private discussion between the project coordinator and operating contractor. DEIR 2-49.

Mechanical vegetation treatment activities, such as mastication, are case in point. The effects of mechanical vegetation activities on native plants are positively grisly. As described in the DEIR, "mechanical activities have the potential for significant effects in all lifeforms since there is no comparable natural disturbance to which individual plants or communities have adapted over time, and because of the high level of disturbance to canopy cover and the soil layer." DEIR 4-195. It is unlikely that any native plant community could survive a major mastication. Nowhere does the DEIR specify where mastication would occur in Marin County (other than potentially everywhere in the WUI). Nor is there any assurance that the public will be notified or that any public CEQA review will occur prior to mastication taking place. Consequently, this most destructive of vegetation treatment programs would likely completely avoid environmental review under the DEIR.

How can appropriate vegetation management, or lack of treatment, be conducted if careful analysis of the resources of each site is not done with local input at time of intended action?

Since the DEIR has virtually no information on which to determine whether a subsequent activity will have a significant effect on protected plant species or sensitive natural communities, on what basis will an evaluation be made as to whether subsequent activity will have a potential significant effect on protected species?

Does not this DEIR need to be revised to require public review of environmental effects of specific vegetation treatment projects and proposed mitigations at the time a specific vegetation treatment program is proposed?

Since the DEIR has no documentation of the potential effects of a particular vegetation treatment plan on the protected plant species and sensitive plant communities specifically affected by that plan, will not an EIR be required in every instance that a subsequent activity has any potential significant impact on a protected plant species or sensitive plant communities?

In summary, what CEQA requires to be public, transparent and scientifically based, this DEIR makes private, secret and potentially subjective.

3. THE STANDARDS PROPOSED IN THE DEIR ARE INADEQUATE TO PROTECT SPECIAL STATUS PLANT SPECIES AND SENSITIVE NATURAL COMMUNITIES.

The DEIR points out that under CEQA Guidelines and mandatory findings of significance and other applicable wildlife protection laws, a project

> "would have a significant impact on wildlife, aquatic species, and vegetation and in relation to invasive species if it would have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species." DEIR 4-182?

CEQA recognizes that plants do not grow in isolation, but rather in plant communities. It also recognizes "habitat modifications" can have a significant effect on special status plants, even when an individual plant is not affected. Thus, CEQA review must focus not simply on individual special status plants but also on sensitive plant communities. The DEIR standards for review of these effects are woefully inadequate.

The only specific standard providing for avoidance of adverse effects on special status plants and sensitive natural communities is a 15-foot minimum clearance rule for special status plants. Mitigation Measure BIO-4. DEIR 4-212. There does not appear to be a scientific basis for this minimum clearance rule, and none is discussed in the DEIR. This one-size-fits-all 15-foot clearance rule ignores potential VTP impacts on habit modification and sensitive natural communities and encourages a focus on individual plants rather than the broader ecosystem. The DEIR needs to include valid standards for protecting sensitive natural communities and against the adverse effects of habit modification on candidate, sensitive or special status plants.

What is the scientific basis for the proposed 15-foot minimum clearance rule for special status plants?

What is the basis for having a single 15-foot minimum clearance rule for all special status plants?

What specific standards are needed in the DEIR to protect sensitive natural communities?

What specific standards are needed in the DEIR to protect against the adverse effects of habit modification on candidate, sensitive for special status plants?

Under Mitigation Measure BIO-1, a project coordinator is supposed to do desk research on the possible presence of special status species using the California Natural Diversity Database (CNDDB). DEIR 4-211. This presumptive reliance on the CNDDB to determine the presence of special status species ignores the known limitations of that database. According to the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities:

> "Pre-project surveys restricted to known CNDDB rare plant locations may not identify all special status plants and communities present and do not provide a sufficient level of information to determine potential impacts."(Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities, California Natural Resources Agency, Department of Fish and Game (November 24, 2009) (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959) (Field Survey Protocols)

Since DFW protocols for the use of the CNDDB warn that the CNDDB does not provide a sufficient level of information to determine potential impacts on special status plants and communities, how can this DEIR reasonably rely on the CNDDB to identify potential impacts?

Mitigation Measure BIO-1 also requires the project coordinator to conduct a "field review to identify the presence or absence of any special status species, or appropriate habitat for special status species, within the subsequent activity area." DEIR 4-211. The DEIR fails to define what must be included in a field review; however, since the standard term "field survey" is not used by the DEIR, it appears that field surveys are not required to identify special status plants and sensitive natural communities before vegetation treatment projects are commenced. Nor does there appear to be any requirement that project coordinators be competent to carry out field surveys or even field reviews, whatever those include. However, in the absence of competently conducted field surveys, there can be no assurance that a specific vegetation treatment project will have no significant effect on special status plants, their habitats, or on sensitive natural communities. Indeed, for field surveys to be valid they typically must be conducted when special status species are both evident and identifiable, usually during flowering or fruiting, and this often requires multiple visits to the site. See Field Survey Protocols, p. 4. The absence of a requirement for valid field surveys that are conducted by persons competent to carry out those surveys, and for surveys to be conducted in a valid manner means that this DEIR fails to ensure that special status plants, their habitats and sensitive natural communities will be identified in project areas and that the impact of projects on them will be avoided or mitigated.

What is the minimum a project coordinator must do to conduct a “field review”?

Should not the DEIR include standards for conducting a “field review”?

What training or specific competence, if any, must a project coordinator have to conduct a “field review”?

Should not this DEIR require the use of standard field surveys conducted by persons competent to conduct such surveys to identify the presence of special status plants, their habitats and sensitive natural communities?

Information collected on a specific VTP by the project coordinator is supposed to be submitted and reviewed by a CAL FIRE Environmental Coordinator. Mitigation Measure BIO-1, DEIR 4-211. Then, the environmental coordinator is required to “offer to schedule a day to visit the subsequent activity area with the Project Coordinator.” *Id.*

It appears that there is no requirement that the environmental coordinator actually visit the project site. For example, if a date has been set for a project, and the environmental coordinator and project coordinator are not able to schedule a meeting at the site before that time, it appears that the project could proceed without any on-site review by the environmental coordinator.

The DEIR contains a similar environmental review avoidance strategy in its submission of environmental information to, and requests for information from, state and federal Fish and Wildlife Services. If agency staff do not receive a response from these Fish and Wildlife Services within 30 days, the project can proceed as proposed without their review. Mitigation Measure BIO-1, DEIR 4-211.

Thus, it appears that the mitigation measures proposed by the DEIR are fashioned to expedite vegetation treatment projects more than to ensure adequate review of the presence of special status plant species and sensitive natural communities, the potential effects of the project on them and needed avoidance and mitigations.

Should not the DEIR require that the environmental coordinator actually visit the project site?

Should not the DEIR specify the activities the environmental coordinator should perform at the project site to determine the presence of special status plant species and sensitive natural communities, the potential effects of the project on them and needed avoidance and mitigations?

How will CAL FIRE know whether there are California or Federal listed endangered species, especially on private, unsurveyed lands? Has CAL FIRE investigated what particular vegetation alliances are found in areas of concern, including in Marin, using the Manual of California Vegetation (2d Ed), and taken into account the rarity of each alliance? And if not, why not?

4. THE DEIR SEEKS TO IMPLEMENT OUTMODED FIRE SUPPRESSION STRATEGIES THAT CONFLICT WITH THOSE ADOPTED BY MARIN COUNTY PUBLIC LAND AGENCIES

The major fire suppression strategies proposed by the DEIR are the use of ridgeline fuel breaks and the clearing of vast acreages of interior forests, woodlands, grasslands and chaparral. In contrast, the primary focus of Marin County land agencies is on creating defensible space at or near the boundary of the wildland urban interface (WUI). The adoption of this defensible space strategy is based on effectiveness, environmental concerns and cost.

Marin Municipal Water District recently conducted a survey of land management agencies concerning recommended fire suppression strategies. That survey found that land managers expressed an overwhelming preference for the establishment of defensible space zones along the wildland urban interface “as the most effective approach to reducing fire risk, protecting structures and adjacent communities and reducing impacts to natural resources.” Reported in Vegetation and Biodiversity Management, Marin County Parks and Open Space, April 2015 Draft, p. 2-28. It found that “ridgetop fuel breaks typically have limited effectiveness for stopping the spread of fire during large fire events.” *Id.* at 2-34. Land managers surveyed expressed concerns that constructing and maintaining fuel breaks could be cost prohibitive. They also expressed concern about the adverse effect of fuel breaks on watershed biodiversity and noted that fuel breaks promoted the spread of invasive plants. *Id.* at 2-34, 2-35, 2-35, 3-38.

A huge problem with respect to the creation of fuel breaks is the introduction and spread of invasive plant species. Fuel breaks appear to have a predictable effect of vegetation type conversion from native vegetation to noxious weeds. Indeed, the DEIR notes that if noxious weed seeds are in the soil, mechanical vegetation treatments will spread those seeds making the situation worse. DEIR 4-59. A Marin County Parks and Open Space report found that the aggressive invasion of French, Scotch and Spanish broom into treated areas is one of the largest impediments to fuel break maintenance, which greatly adds to their cost, and can dramatically reduce their effectiveness. Vegetation and Biodiversity Management, Marin County Parks and Open Space, April 2015 Draft, p. 3-18. Indeed, inadequately maintained fuel breaks are likely to add to fire danger by substituting fuel-dense invasive plants for native vegetation.

Another major problem with fuel breaks is the cost of maintenance: fuel breaks require regular and never-ending maintenance. If a fuel break "is not regularly maintained, the level of effort and cost required to reestablish the desired conditions approaches that of new construction." Vegetation and Biodiversity Management, Marin County Parks and Open Space, April 2015 Draft, p. 3-18, 3-35, 3-38.

What assurance is there that fuel breaks created under the DEIR will be adequately maintained to prevent noxious invasive weeds from become established and spreading and increasing fire danger?

Since a fire suppression strategy based largely on ridgeline fuel breaks has problems of effectiveness, high cost and serious damage to biological resources in comparison to other fire suppression strategies such as those focused on defensible space near the borders of the wildland urban interface, the DEIR needs to discuss the merits of other fire suppression strategies, including those focused on defensible space. The defensible space strategy should also be considered an alternative that needs to be analyzed by the DEIR, particularly as a result of its apparent significant advantage for preserving special status species and sensitive natural communities in places like Marin County where these abound.

A huge omission from the DEIR is any discussion of the fire suppression strategies of other public land management agencies within the SRA. Surely a VTP that purported to outline an effective fire suppression strategy for Marin County would include a discussion of coordination with the specific fire suppression strategies and programs of other public land management agencies in the county. Even if CAL Fire's major focus in Marin County is on private land, publicly managed land is sprinkled throughout the county and Marin County land management agencies have already taken the lead in vegetation treatment programs aimed at fire suppression.

Why wasn't the DEIR written with major emphasis on land use planning and making defensible space? There is so much that can be done, such as plans that discourage further incursion into wildlands, and requiring use of fire resistant building materials and landscape. Would it not be a good idea to incorporate education on how to build fire-resistant structures in architectural and building curricula – and educate landscapers on fire-resistant plantings?

Does the DEIR intend that vegetation treatment programs authorized under it will be implemented in isolation from fire suppression strategies and programs operated by county land management agencies?

What are the merits of other fire suppression strategies, including those focused on defensible space, in comparison to the fire suppression strategies discussed in the current DEIR?

If coordination is intended, how will vegetation treatment programs authorized under the DEIR be coordinated and integrated with fire suppression strategies and programs operated by county land management agencies?

5. **THE DEIR IGNORES THE POTENTIAL IMPACT OF VEGETATION TREATMENT PROGRAMS ON MARIN COUNTY'S HIGHLY SENSITIVE NATURAL AREAS**

Serpentine areas, which are home to a disproportionate number of protected plant species and communities, are a good example of a highly sensitive natural area in Marin County. Many of the ridgelines designated by the DEIR for fuel breaks are serpentine soil and rock formations. Disturbance or destruction of serpentine soils or outcrops could wreak havoc on those plants and communities. Although serpentine areas are some of the most environmentally sensitive in Marin County, the DEIR ignores the potential impact of the VTP on them. The potential impact of the DEIR on serpentine soils and rock formations and other sensitive natural areas in the county and their associated special status plants and sensitive plant communities needs to be analyzed.

What impact will the VTP have on Marin County's sensitive natural areas such as serpentine soils and rock formations and the protected plant species and communities that grow there?

6. **THE DEIR SHOULD CONSIDER ECOLOGICAL RESTORATION FOR HIGHLY SENSITIVE PLANT COMMUNITIES, WHEREVER THEY EXIST**

The DEIR limits the ecological restoration vegetation treatment to areas outside of the WUI. DEIR 4-50. Yet, in Marin County a number of areas within the WUI appear to be good candidates for ecological restoration.

For example, the Ring Mountain Open Space Preserve is home to some of the rarest plants on the planet including the Tiburon Mariposa Lily (Calochortus tiburonensis) which exist nowhere else. Because this area is within the WUI, it is excluded from ecological restoration by the DEIR; consequently, the DEIR proposes fire breaks and other highly intrusive and destructive projects for Ring Mountain.

Another example is the manzanitas on Mount Tamalpais. Decades of wildfire suppression on Mount Tam have resulted in Manzanitas being shaded out by encroaching Douglas fir, leaving dead undergrowth as fuel for future wildfire. One of Marin's special status endemic manzanita, the Mount Tamalpais Manzanita (Arctostaphylos montana), grows primarily on Mount Tamalpais in chaparral serpentine (for example, above Boot Jack Camp, the Carson area, and Giacomini Open Space). In addition to manzanita, other special status plants and sensitive plant communities in Marin County are also associated with serpentine. For example, the Sargent Cypress (Cupressus sargentii) is a California endemic that grows on the serpentine formations on Mount Tam. Mt. Tamalpais Jewelflower (Streptanthus glandulosus ssp. pulchellus) is a listed species that grows on the serpentine barrens of Mount Tam.

The DEIR identifies ecological restoration as the preferred treatment for the western slope of Mount Tamalpais but bars the use of this treatment on other slopes of the mountain that are in the WUI. The prohibition on the use of ecological restoration in the WUI appears arbitrary. This is particularly true in the case of serpentine formations that are often sparsely populated with plants and much less susceptible to intense fires. The DEIR should consider and discuss the use of ecological restoration in the WUI where a vegetation treatment program could adversely affect special status plants and sensitive plant communities or where fire safety would be improved by enhancing the viability of special status plants and sensitive natural communities.

Should not ecological restoration be considered an appropriate vegetation treatment in the WUI on a case-by-case basis?

Chaparral needs 40 to 100 years to recover from fire – to build up its seed bank, root system and canopy which resists ignition. More frequent burning can set succession back to more fire prone, invasive susceptible vegetation. How will the lifecycle of chaparral be protected?

What will be done to protect speciation? For example, Jim Roof, former director of the Tilden Park Botanic Garden and a specialist of the genus, Arctostaphylos (manzanita), described the Mount Tamalpais area as one where manzanita is undergoing a considerable amount of speciation, a hotbed of evolutionary activity. What actions will be taken under the DEIR so that its programs that will not interfere with this evolutionary process?

Frank Almeda, when he was Chairman of Botany Department at California Academy of Sciences, wrote of Mount Tamalpais with its rich assemblage of plant and animal species, as one of the unique and well-known natural treasures of Northern California, noting that scientists used it regularly as an outdoor laboratory. He wrote of the importance of its "species composition, zonation, and juxtaposition of tracts in various stages of secondary succession to climax woodland" – and thus a less fire prone state. How will the DEIR mitigate for loss of desirable succession?

7. Conclusion

Marin County is a hotbed of biodiversity. The vegetation treatment projects proposed under this DEIR could have a dramatic adverse impact on the special status plants and sensitive natural communities of Marin County. From this DEIR it is impossible to determine the impacts of the proposed vegetation treatment projects on the protected flora of the county. This DEIR would then effectively deny any meaningful public review and comment on CEQA environmental issues at the time environmental impacts are actually known. Furthermore, standards proposed in the DEIR for review of environmental issues are inadequate to protect special status plant species and sensitive natural communities. The DEIR also seeks to implement outmoded fire suppression strategies that conflict with those adopted by Marin County public land agencies. Examples of potential specific harms to Marin Flora from this DEIR include its ignoring the potential impact of vegetation treatments on Marin County's sensitive natural areas such as serpentine and the failure to consider ecological restoration for highly sensitive plant communities wherever they exist. We respectfully request that the final EIR respond to each of the points and questions contained in this letter.

Thank you for your consideration,

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May 31, 2016

Edith Hannigan, Board Analyst
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Re: Draft Programmatic Environmental Impact Report For The Vegetation Treatment Program of the California State Board of Forestry and Fire Protection

Dear Ms Hannigan and Members of the Board:

We appreciate the opportunity to comment on the Draft Programmatic Environmental Impact Report for The Vegetation Treatment Program Of the California State Board of Forestry and Fire Protection ("DEIR," "VTP," "BoF").

The California Native Plant Society (CNPS) works to protect California's native plant heritage and preserve it for future generations. CNPS promotes sound plant science and action against climate change as the backbone of effective natural areas protection. We work closely with decision-makers, scientists, and planners to advocate for well informed and environmentally friendly policies, regulations, and land management practices. CNPS support appropriate land management practices to sustain California native plant species, both on properties dedicated to that purpose (e.g. State, Federal, County, or local and private conservation parks or preserves) and other properties, private and public, where these species occur, especially where their continued survival helps provide a genetic buffer for their survival, should catastrophic events destroy them in protected areas.

We strongly agree that fire and invasive species are critical issues that must be actively managed. However, **westrongly recommends that this DEIR NOT be certified, due to lack of substantial evidence to support contentions and conclusions made throughout the document, due to substantial procedural lapses and irregularities, as well as the other issues we list below. We further contend that it cannot serve the purpose it was apparently designed for, and propose possibly more workable solutions for the Board's consideration.**

Based on the DEIR, we have many questions, including:

1. How the DEIR deals with its procedural lapses and irregularities
2. How the DEIR deals with native plants issues
3. How the DEIR deals with climate change
4. Why the DEIR contains so many misstatements based on scientific papers, reliance on anecdotal evidence, and avoidance of scientific advice?
5. Why the DEIR contains so many internal contradictions.

The following groups of questions are based on the concerns summarized above. We formally request that the BoF fully consider and respond to our questions in an effort to improve the Draft DEIR by clarifying, among other things, its purpose, rationale, and management structure.

We note that this letter contains similar material to the San Diego CNPS (CNPSSD) comment letter on a previous version of the DEIR, sent February 15, 2013. That letter also included a formal request to the Board of Forestry to respond to the questions that letter raised. The BoF never responded to that request, which is unfortunate, as many of those questions were specifically designed to help the BoF write a better DEIR. As a result, the current Report repeats many of its predecessors' mistakes, and the same criticisms still apply.

Background

California is inarguably the most complicated state in the US, whether the complexity is biodiversity (California is a global biodiversity hotspot[1]), socio-political, geographic, geologic, or in the massive infrastructure of aqueducts, power grids, farms, forests, and cities that allow over 38,000,000 people to live here. Worse, climate change is affecting everything, from water availability to fire behavior. Writing a programmatic EIR (PEIR) is about analyzing the predictable, cumulative impacts of a program. Writing a PEIR for a program that proposes a diverse set activities across almost one-fifth of California is a truly titanic undertaking that the writers of the DEIR did not really engage in.

The main body of the DEIR is only 759 pages long, and it contains multiple repetitions. To show why this is a problem, compare it to the natural resources management plan and Mitigated Negative Declaration for 1,092 acres of urban park in San Diego, which was 159 pages long[2]. The DEIR, supposedly an analysis of a long-term program that proposes to treat up to 22,000,000 acres over decades, is barely five times longer than a routine local management document that deals with a few miles of trail. There is no way the DEIR can provide adequate analysis in so short a length, and it does not. The scale of the DEIR far too small for the VTP. Unfortunately, the issues do with the DEIR do not stop at its short length.

1. With respect to CEQA, we noticed numerous procedural lapses and irregularities:

1.A. Why is the DEIR written with such lack of detail? It certainly is not because it is a PEIR. According to CEQA, all EIRs, whether programmatic or not, need to contain a detailed analysis, and PEIRs are supposed to analyze impacts " as specifically and comprehensively as possible."[3] Indeed, the role of a PEIR is two-fold: it includes “more exhaustive consideration" of

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[1] Myers, N., Mittermeier, R. A., Mittermeier, C. G., da Fonseca, G. A. B., and J. Kent. (2000). Biodiversity hotspots for conservation priorities. *Nature*, 403(6772), 853-858.

[2] City of San Diego (2015). Carmel Mountain/Del Mar Mesa Natural Resources Management Plan and Trail System..

[3] CEQA Guidelines, 15168(a), (c)(5)

impacts, mitigation, and alternatives than an individual project EIR could include, and it considers cumulative impacts[4]. Projects are supposed to "tier" off the PEIR, depending on and supplementing its analysis only, not doing the work that it was supposed to contain.

CEQA further notes that "[t]iering does not excuse the lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis to a later tier EIR or negative declaration."[5] Also, "[d]esignating an EIR as a program EIR also does not by itself decrease the level of analysis otherwise required in the EIR."[6] Programmatic EIRs must contain "extensive, detailed evaluations" of a plan's impacts on the existing environment. The DEIR's reliance on future, project-level environmental review is contrary to CEQA's policy of favoring early identification of environmental impacts. CEQA does not allow agencies to defer analysis of a plan's impacts to some future EIR for specific projects contemplated by that plan. Finally, as we understand it (we are not lawyers) the courts have ruled that environmental review must take place before project approval, and specifically that, in an programmatic EIR, tiering" is not a device for deferring identification of significant environmental impacts that the adoption of a specific plan can be expected to cause."[7]

Given that the DEIR does exactly the opposite of what CEQA policy states and courts support, why was it written that way? Would it not have been better to follow CEQA and relevant case law?

1.B. What exactly is the Proposed VTP, and what are its boundaries in space and time?
Here is what we do know about the VTP, from the DEIR:

- (p. E-6) "The total land area where the vegetation formation assemblages are appropriate for a ...treatment is approximately 22 million acres, or 71 percent of the SRA [State Responsibility Area]."
- Maps in Figure ES-1 (pE-7) make it clear that many treatment acres are outside the SRA. Other maps (e.g. Figure A1-1, p. A-2) show that some of the "treatable acres in the VTP" are either in Local Responsibility Areas or Federal Responsibility Areas, although all maps in the DEIR are at too small a scale to see boundaries, a fact emphasized by the "blowup" sections on some to show the presence of undescribed and unanalyzed details (e.g. 2.2-9, p. 2-20).
- The VTP seeks to treat 60,000 acres per year, with 231 projects per year averaging 260 acres each (p. 2-35). This is huge (60,000 acres is 93.75 square miles, roughly the size of Oakland and Berkeley combined), but it is not clear if it is appropriate. For example, if every one of the 22,000,000 acres " appropriate for a treatment" were to be treated just once, it would take almost 367 years (22,000,000 acres/60,000 acres per year), which is clearly inadequate for any kind of sustained vegetation management. Clearly the VTP actually intends to treat a small subset of land " appropriate for a treatment, "but the actual parcels to be treated are not discussed, mapped, or analyzed, and may not be determined yet.
- The VTP breaks California down into nine ecoregions; it proposes three types of fuel management treatments, at the Wildand Urban Interface (WUI), on fire breaks, and as ecological restoration; it proposes a menu of treatment activities including controlled burns (supposedly half of the treatments), grazing with non-native herbivores, mechanical

[4] CEQA Guidelines, 15168(b)(1)-(2).
[5] CEQA Guidelines 15152(b)
[6] CEQA Guidelines 15160.
[7] Stanislaus Natural Heritage Project v. County of Stanislaus (1996)

clearance, clearance by hand, and herbicide application. Just a simple combinatorial analysis, 9 ecoregions times 3 management treatments times 5 treatment activities, leads to 135 different scenarios, even without adding further very necessary complexities. Analyzing the impacts of over one hundred scenarios is an enormous task, one that is impossible in a document that is only 759 pages long. Indeed, the DEIR does not grapple with this full complexity at all, so we have no idea exactly what will happen when, where, why, or how often.

There is a problem with this approach: as we understand it, the courts have ruled that "[a]n accurate, stable and finite project description" in an EIR is necessary to analyze its impacts, and a "truncated project concept" violates CEQA.[8] While exhaustive detail is unnecessary, CEQA mandates that EIR project descriptions should be sufficiently detailed, and sufficiently accurate, to permit informed decision making.[9]

Given that the DEIR does exactly the opposite of what CEQA policy states and courts support, why was the DEIR written that way? Would it not have been better to follow CEQA and relevant case law? What exactly is the VTP?

1.C. Where is the program map, and what parcels are subject to the VTP? According to CEQA[10]: "The precise location and boundaries of the proposed project shall be shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map." While numerous maps are supplied, they are labeled as responsibility areas or as modeled areas that might be treated. We could find no hard-line map.

- How can local impacts be analyzed if the time and place affected by any program is not specified? How can cumulative impacts be analyzed if there is insufficient local data on where and when the program occurs, and what is affected?
- How can landowners determine whether they or neighboring properties are susceptible to the VTP, in case they want to take action?
- Why does the DEIR show maps that are insufficiently detailed for any landowner to determine whether they are subject to the proposed program or not?

Environmental impacts must, by definition, have an environment in which to occur. Phrasing the acreage as " appropriate for treatment" is insufficient. If a parcel is considered eligible for the Program, then the Program has a boundary, and all parcels within that boundary must shown on maps, to circumscribe the environment impacted by the Program.

There is a second map issue, which can be seen clearly in Figure ES-1, but which is repeated throughout the DEIR: **Why do the maps of the State Responsibility Area, Treatable Vegetation Formations, and Treatable Acres in the VTP not agree? It appears that there are quite a few acres (fire breaks?) that occur in the deserts and other areas outside the State Responsibility Area. Is CALFIRE responsible for these?**

- **Why is vegetation that is outside the State Responsibility Area discussed but not mapped?**
- **Why are there fuel breaks that appear to be in the Federal Responsibility Area (compare Figure A-1.1, page A-2, and A-1.3, page A-5)? If these areas are under Federal Responsibility should the DEIR not also be an environmental impact statement, and EIR/S?**

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[8] Sacramento Old City Association. v. City Council (1991), Rio Vista Farm Bureau v. County. of Solano (1992)
[9] CEQA Guidelines § 15124
[10] ibid.

1.D How does the DEIR deal with thresholds of significance? CEQA presumes that agencies will use thresholds of significance as a tool for determining the significance of a project's possible impacts. [11] What are the thresholds of significance for biological impacts in the DEIR? We could not find them, and this causes problems throughout the document. For example, the DEIR states that the VTP would have a significant impact if it contributes to the substantial, long-term decline in the viability of any native species (p. 4-115). Unfortunately, there is no threshold to determine what substantial, long-term, and viability mean in order to determine when a significant impact has occurred. Without thresholds, there is no mechanism for determining whether impacts have been mitigated to below the level of significance, and thus the analysis is incomplete.

1.E. Why does the DEIR defer analysis of so many impacts and creation of mitigations until after it is approved? CEQA requires EIRs to be detailed, complete, and contain a sufficient degree of analysis to let the public and decision-makers understand the proposed project's adverse environmental impacts, so that corrections can be made and an informed decision can ultimately be undertaken.[12] As we understand it, the courts repeatedly have ruled against deferring analysis until after the EIR is approved.[13] Similarly, EIRs are generally not allowed to defer evaluation of mitigations.[14] Why does the VTP DEIR resort to these tactics so often?

1.F. Why does the DEIR inadequately analyze so many impacts from the VTP? Under CEQA, "[a]n EIR shall identify and focus on the significant effects of the proposed project."[15] As we understand it, the courts have ruled against merely incorporating the conclusions of an analysis, and that an EIR must contain facts and analysis as well.[16] We deal with one glaring botanical example of this problem below in 2.A., but it is ubiquitous throughout the DEIR. Why does the DEIR resort to inadequate analysis so often?

1.G. Why does the DEIR contain so many mitigation measures that are vague, unenforceable, and inadequate? CEQA requires all EIRs to not only identify significant impacts but also to find ways to mitigate them below the level of significance as much as possible.[17] Furthermore, the mitigation measures must be enforceable.[18] As we understand it, the courts have ruled against mitigation measures that are vague and unenforceable. [19] Why does the VTP DEIR resort to these tactics so often? Where is the detailed, complete, and sufficient analysis in the DEIR to allow anyone to conclude that the VTP will not have significant individual and cumulative impacts?

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[11] CEQA Guidelines § 15064(a), 15064.7
[12] CEQA Guidelines § 15151.
[13] No Oil, Inc. v. City of Los Angeles (1974), Sundstrom v. County of Mendocino (1988), Gentry v. City of Murrieta (1995).
[14] CEQA Guidelines § 15126.4(a)(1)(B)
[15] CEQA Guidelines § 15126.2(a)
[16] Citizens of Goleta Valley v. Board of Supervisors (1990)
[17] Public Resources Code, §§ 21002, 21061.1; CEQA Guidelines §§ 15021(b), 15364
[18] Public Resources Code, § 21002; CEQA Guidelines §§ 15002(a)(3), 15126.4(a)(2)
[19] Anderson First Coalition v. City of Anderson (2005)

1. H. Why are the Objectives so badly defined?

- **Aren't Objectives 2, 3, and 4 subsets of Objective 1?** Objective 1, "Modify wildland fire behavior to help reduce losses to life, property, and natural resources,"(p. E-3) includes objectives 2-4 so one can argue that 2-4 are redundant. These objectives perhaps refer instead to the three treatment activities respectively deal with fire in the wildland urban interface ("WUI"), fire breaks, and "ecological restoration," although not only are they not named as such. In any case, they are, at best, sub-goals of #1. Why separate them out?
- **Can the VTP accomplish Objectives 2 and 3?** Objective 2 (p. E-2) states: "[i]ncrease the opportunities for altering or influencing the size, intensity, shape, and direction of wildfires within the wildland urban interface," and Objective 3 (p. E-3) states: "Reduce the potential size and total associated suppression costs of individual wildland fires by altering the continuity of wildland fuels." If the average VTP project is 260 acres, less the half a square mile, and embers can travel up to 12 miles (see section 4 below), then are VTP projects at the right scale to make any meaningful difference? The VTP needs to make clear what kinds of fires it envisions protecting against, because these two objectives seem to be scaled too small to control the wind-driven fires that cause a vast majority of destruction in California.
- **What is meant by Objective 4?** Objective 4 (p. E-3) is to "[r]educe the potential for high severity fires by restoring and maintaining a range of native, fire-adapted plant communities through periodic low intensity treatments within the appropriate vegetation types." While this might make sense in, for instance, ponderosa pine forests that have become overgrown with saplings due to fire suppression, it appears that the majority of controlled burns are aimed at shrub-dominated vegetation, e.g. chaparral (p. 4-427). As both the California Chaparral Institute and CNPSSD have argued repeatedly, there is too much fire in chaparral, especially in southern California. The simplest way to improve this fire return interval is to not burn in chaparral for the next century or so. Both Objective 4 and the VTP itself need to become consistent and transparent about what they intend to burn, where, and why. CNPSSD does not disagree that some plant communities, such as some ponderosa pine stands in the Sierra Nevada, could benefit from controlled burns. These need to be called out so that the impacts of treating them can be analyzed. Why were they not identified in this DEIR?

1.I. Why does the Alternatives Analysis depend so much on acres treated? One major issue here is that treating 60,000 acres per year is not one of the official objectives of the VTP, so it should not be used to judge alternatives. Clearly, however, it is the main *unofficial* objective. Nonetheless, the goal of 60,000 acres per year with unlimited potential for expansion to 22,000,000 acres is problematic, because it means that areas get treated once per century or once per 366 years, as noted above. Things like fire breaks only work if they are cleared regularly, ideally every year. However, limiting the VTP to acres that could be cleared every year would limit the program to something as small as 60,000 high-value acres (so that each acre could be cleared once every year). Any realistic VTP should be something in between 300,000 and 22,000,000 acres (probably less than a few million acres, as even projects in a 1,200,000 acre program would only be visited once every 20 years). That requires a much reduced project, so that some sites are visited frequently, some once. Regardless, any argument that downgrades alternatives because they limit the acreage treated is doomed by logistics and math. It is a criterion based on greed rather than analysis or logistics. Why use it?

We strongly suggest that the BoF consider how much they truly need to work on, and make that the area of the VTP. We also strongly suggest that, if acreage treated is so important, that the VTP make that the first official objective, and stop trying to hide this fundamental motivation for the VTP.

2. With respect to native plant issues, we noticed many problems. The treatment of native plants issues is riddled with issues, starting with the trivial (CNPS is repeatedly referenced in the DEIR, but the acronym is not spelled out nor included in the front glossary). In addition, the plural of plant is not vegetation, and vegetation has different issues than plants, despite the attempt of the DEIR to bundle them together), and going rapidly to the seriously non-functional.

We have the following questions about how native plant issues were treated in the DEIR:

2. A. Why were Standard Project Requirements (SPRs) BIO-1, BIO-2, and BIO-3 not carried out in preparation of the DEIR itself, rather than as a task to be carried out in subsequent analyses? ***The entire botanical analysis*** is the following statement: "[i]mpacts to botanical resources were analyzed by examining special status plants and communities listed in the California Natural Diversity Database (CNDDB) for each bioregion."**How does this meet CEQA Guideline 15125(c): "The EIR must demonstrate that the significant environmental impacts of the proposed project were adequately investigated and discussed and it must permit the significant effects of the project to be considered in the full environmental context[?]"**

Note that CEQA requires this analysis in all EIRs. It is not option, nor, as noted above, is it allowable to forego this impacts analysis until after the VTP DEIR is approved.

- Where is the detailed evidence that this analysis was ever done?
- What were the detailed results of this analysis?
- What can we check to determine that this analysis was done properly, so that we can help fix any deficiencies?
- What were the impacts to populations of sensitive species? How many will be lost? How many will need to be transplanted or replanted? How many new populations were discovered?
- How are the impacts to each species to be mitigated below significance?
- What are the cumulative impacts?
- How are they to be mitigated below the level of significance?
- Are there unavoidable impacts? Where is the declaration of over-riding consideration for them?
- How did impacts to sensitive plants and the mitigation thereof influence the design of the VTP?

The current version of the DEIR has the dubious distinction of containing even less information about California's native plants than did its predecessors. Note that not all of California's plant species are affected by the VTP. Insular species like the extremely rare *Cercocarpus traskiae* will never be subject to vegetation treatment. Nor will a wide selection of beach dune plants (e.g. *Acmispon prostratus*, *Phacelia stellaris*, and *Nemacaulis denudata* var. *denudata*) that mostly occur on urban dunes. The fundamental point is that the Program does not affect all listed plants, it affects a subset of them. Why was this subset not identified?

2.B. Why is the biological description of the project area so incomplete? 4.2.1.2, the Biological Setting and Concerns, is a description of the "nine ecoregions" used in the analysis (p.4-85-4-109) is not useful for environmental analysis. It does not describe what is important, it does not describe what is impacted, it does not use scientific names, but it does lump together plants with radically different fire ecologies and pretends they are equivalent. Indeed, it does not describe concerns or in any way highlight which bits of information are actually important. (For example, the Sierra Nevada is described as having "bold topography," rather than by the elevation range of any vegetation type or species mentioned).

According to CEQA,"[a]n EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published."[20] This includes the plants and animals within the project's boundary. Section 4.2.1.2. fails to do this. To pick one concern that is left undescribed, we learn on page 4-427, in the climate change section, that the majority of the 30,000 acres subject to controlled burns will occur in "shrub dominated vegetation." Despite the presence of BIO-5, it appears that the VTP specifically targets chaparral, but this is not mentioned in the Biological Setting and Concerns. Why is it not mentioned?

Worse, the DEIR contradicts itself on the utility of ecoregions. For example, it notes (p. 4-79) that "evaluating impacts at the bio-regional scale allows for a reasonable analysis of the foreseeable impacts without being neither so large an area as to dilute the impacts or too small an area to magnify the impacts," but later (p. 4-121) states that "[i]n order for an effect to be considered significant at the bioregional level, the species in question would have to be impacted enough to meet one of the Significance Criteria stated above. The amount of habitat that would have to be adversely modified to cause a substantial adverse effect has not been scientifically determined for most species and is likely unknowable until the threshold has been crossed and the species is in jeopardy." In other words, despite the importance of threshold analysis in CEQA as noted above, this document appears to regard threshold impacts as unknowable, at least at the bio-regional scale. Why was this scale used? It is also very unclear what the "Significance Criteria stated above" are, since this is the first use of the term "Significance Criteria" and other uses refer to over issues. What are they?

2.C. Why is SPR BIO-1 thought to be sufficient or workable? To us, SPR BIO-1 is unworkable, as it does not cover sensitive species on the CRPR list (note that the CNPS list has been the California Rare Plants Rank list for many years now), nor does it cover species protected by cities and counties. As written, this SPR fails to cover hundreds of sensitive plants. Moreover, the DEIR misses the fact that List 2 was split to List 2A and List 2B, to parallel Lists 1A and 1B. This SPR must be rewritten to conform to current practice and terminology, as it is obsolete as written. At the very least, the definition should follow CDFW current practice. We also note that counties like San Diego and Ventura have their own lists, which largely, but not entirely, match with those maintained by the state. The VTP should honor local lists and local practice that reflect local expertise and local needs.

2.D. Why does SPR BIO-2 designate the Project Coordinator to conduct a field review of any proposed project? What qualifications demonstrate that the Project Coordinator is competent to perform field identifications? Where is this competency requirement specified in the VTP? How will qualifications be assessed? The problem is that, unless the Project Coordinator is a qualified botanist, (s)he will lack the ability to determine how accurate the CNDDB or any other database is, will not know when or how to survey (the excellent

[20] CEQA guideline § 15125

guidance from CDFW and CNPS is inadequate without real training), will not know how to collect specimens, nor where to send them in problematic cases, nor how to deal with any truly complex issues.

Another problem here is that all databases are insufficient. For example, the CNDDB states, "[W]e cannot and do not portray the CNDDB as an exhaustive and comprehensive inventory of all rare species and natural communities statewide. Field verification for the presence or absence of sensitive species will always be an important obligation of our customers."[21] Trained botanists know this. Untrained bureaucrats do not.

It is routine to find new populations of sensitive species or even new species in areas (such as large, old ranches) that were never or rarely surveyed. The author of this letter (Dr. Landis) found what eventually turned out to be a new species of *Eriastrum* in 2007, on a wind farm project in the Tehachapis. The San Diego Plant Atlas, since 2003, has found over 300 new county records, 10 state records, and 2 new taxa.[22] Tejonflora.org documents the ongoing floristic survey of the Tejon Ranch, and the new species that are being described from there. A new species of cholla was described in Riverside and Imperial County in 2014[23], and an undescribed new manzanita species will be published in June. *Carex cyrtostachya*, described in 2013, is found in Butte, Yuba, and El Dorado Counties,[24] and it is a CRPR List 1B species that may not yet be in CNDDB. The same is true for the Sierran *Carex xerophila*, published in 2014,[25] and for *Calystegia vanzuukiae* from El Dorado County, published in 2013.[26] According to an informal, one-week email and Facebook survey of CNPS botanists undertaken in the last week of May 2016, undescribed new species in process of identification were reported to exist in Marin, Tehama, Butte, Shasta, and Santa Barbara counties, and more will certainly be found as large, old ranches and remote areas are surveyed for development, wind, and solar projects, and probably for the VTP. Experienced botanists know how to deal with this issue. Untrained bureaucrats do not.

The VTP provides no guidance as to the qualifications of Project Coordinators, nor does it specify when or how long they should spend in the field in each project, going against the advice of both CDFW and CNPS cited in the DEIR. In any case, CNPS always strongly suggests that surveys be left to qualified botanists with experience in the local area of any proposed project, that surveys should take place when the plants are most likely to be alive and identifiable, and that qualified surveyors be allowed adequate time for their work, and not forced to do a cursory, 15 minute visit where they do not get out of the vehicle. What is to stop Project Coordinators from doing cursory drive-by visits and not even setting foot on project sites? Why should drive-by surveys be considered acceptable under CEQA?

[21] http://www.dfg.ca.gov/biogeodata/cnddb/cnddb_info.asp
[22] http://sdnhm.org/science/botany/projects/plant-atlas/, accessed 5/26/2016
[23] Baker, M. A., & Cloud-Hughes, M. A. (2014). *Cylindropuntia chuckwallensis* (Cactaceae), a New Species from Riverside and Imperial Counties, California. *Madroño, 61*(2), 231-243.
[24] Zika, P.F., L.P. Janeway, B. L. Wilson and L. Ahart (2013) *Carex cyrtostachya* (Cyperaceae), a new species of sedge endemic to the Sierra Nevada of California. *Journal of the Botanical Research Institute of Texas* 7:25–35.
[25] , Zika, P.F., L. P. Janeway and B. L. Wilson (2014) *Carex xerophila* (Cyperaceae), a New Sedge from the Chaparral of Northern California. *Madroño* 61(3):299-307.
[26] Brummitt, R. K. and Namoff, Sandra M. (2013) *Calystegia vanzuukiae* (Convolvulaceae), a Remarkable New Species From Central California. *Aliso* 31(1)

2.E. How is SPR BIO-5 actually supposed to protect anything? Critical terms like "type conversion," "median fire return interval," and " old growth" are left undefined, their determination at the mercy of the Project Coordinator whose qualifications are also left undefined. Moreover, these areas are to be protected for " aesthetics, wildlife, and recreation," not for sensitive plants, lichens, or even the reproduction of species that take decades to reproduce. Why should mountain bikers desiring new trails be privileged over the continued existence of last-of-their-kind stands? Additionally, local experts like the California Chaparral Institute, numerous local land management groups, and scientists from both academia and other agencies are left out of the decision loop. Why are they excluded? Finally, this SPR needs to be extended to all old growth vegetation throughout the state, because there is very little left of any of it. As the author (Dr. Landis) is finding, working in an urban stand of old growth chaparral, old growth is often home to other poorly known or even undescribed species. SPR BIO-5 is unworkable as written. It should incorporate the analysis of impacts to old growth stands directly into the DEIR, rather than forcing it onto a single Project Coordinator who only needs to make a single site visit. Why was this not done?

2.F. Why use the outdated WHR, when so much more useful vegetation information is available? California's flora is immensely complex, but the VTP analysis oversimplifies it by shoehorning all species into trees, shrubs, and herbs. No knowledgeable fire fighter would assume that ponderosa pine (*Pinus ponderosa*) and white fir (*Abies concolor*) have the same fire ecology, but they are all lumped together as "tree-dominated" vegetation (e.g. Table 4.2-14) for the purposes of describing the vegetation in the Sierra Nevada.

Considering that CDFW and CNPS have for decades been cooperating to map the vegetation of California and have created two editions of *The Manual of California Vegetation* ("MCV"), it really is sad to see the 1980s Wildlife Habitat Relationships system used by any state agency. The MCV contains a wealth of information on fire ecology. While it is admittedly incomplete, even incomplete it is a far more complete and more useful as a mapping system than is the WHR. We strongly recommend that the BoF use the MCV as its primary vegetation mapping tool and incorporate the fire ecology information therein into the analysis of programs like the VTP.

2.G. How does the VTP avoid becoming a major vector for pests and pathogens? CNPS has found that non-native, pathogenic water molds (genus *Phytophthora*) are spreading through the state and into wildlands through nursery-mediated infection of plants for restoration and landscaping. In 2015 we implemented a policy to try to stem the spread, at least through native plant nurseries.[27] The genus *Phytophthora* may be unfamiliar, but *Phytophthora ramorum* (the cause of Sudden Oak Death) is depressingly familiar, as is the Irish potato blight (*Phytophthora infestans*) that caused so many famines. Southern California is so far free of Sudden Oak Death, but it faces beetle invasions, from gold-spotted oak borer and polyphagous shot-hole borers. Native pine boring beetles have caused major tree die-offs elsewhere in the state. All of these pests and pathogens can be readily transported by carelessly handled wood, litter, untreated or insufficiently composted green waste, uncleaned equipment, carelessly grown nursery stock, and so on. Proper sanitation and quarantine are necessary to keep vegetation treatment activities from spreading pests and pathogens throughout the state.

[27] http://www.cnps.org/cnps/archive/phytophthora_policy_2015.pdf

Unfortunately, this was not addressed in the DEIR. As a result, the VTP can be expected to cause substantial individual and cumulative impacts as workers inadvertently spread pests and pathogens on uncleaned equipment and by removing dead, but still infected, plant material. Even leaving some infected material might be problematic, as the pest or pathogen could simply reinfest the area from whatever is left behind.

What is the VTP going to do about proper sanitation and quarantine? What are the impacts of doing these, or conversely, of not doing them? How are these impacts to be mitigated, individually and cumulatively?

3. There are serious climate change issues as well. As mentioned in the previous section, CNPS is a champion of California's native plants and of vegetation dominated by native plants. Because we were successful co-plaintiffs in the recent case *Center for Biological Diversity et al. vs. California Department of Fish and Wildlife and Newhall Land and Farming Company* ("Newhall Ranch ruling"), and because we are increasingly having to deal with climate change issues to protect native plants, we now also advocate on climate change issues. In our opinion the treatment of plants and the analysis of climate change impacts in the DEIR have substantial issues. We have a number of issues with the climate change impacts discussion (section 4.14, pp.4-408 to 4-434).

3.A. Why was the analysis of climate change impacts performed as it was? As we understand it, the relevant details of the climate change impacts analysis are as follows:

- The time frame of analysis is one year. Page 4-424: "Because the generally accepted time frame for evaluating project emissions is the year of project implementation with emissions generally reported as MT/year, this is also the time frame chosen for this analysis. This will conservatively estimate the VTPs impacts because the benefits of future vegetative growth as the site recovers and the reduction of wildfire risk to the treatment area and surrounding landscape is not taken into account."
- The DEIR assumes that, of the 60,000 acres proposed to be treated every year, 30,000 acres will be burned, 20% mechanical treatments (p.4-427), 10% manual treatments (p.4-428), and grazing non-native herbivores and spraying herbicides are only accounted for as trip miles, with herbivore methane emissions based on a sheep herd of 450 animals as the only model (p.4-428). Thus, only 50% of it burns.
- Conclusion: there are less than significant impacts to greenhouse gas emissions (p. 4-429): "The VTP would create approximately 298,745 MT/year of CO2e, less than the 510,030 MT/year CO2e emissions created by a similar size wildfire burning."

The conclusion does not follow from the analysis. It is only relevant if the 60,000 acres treated would have burned in the same year it was treated. This is intrinsically unlikely. 60,000 acres treated/22,000,000 acres in the VTP is 0. 272%. According to Figure 1.1-1, (" annual area burned in California 1950-2010", p. 1-3), during the worst wildfire year, 2007, only 1,400,000 acres burned. This is approximately 6.3% of the 22,000,000 acre VTP area. Even during the worst year in recent history, over 93% of the state went unburned.

What are the chances that the area treated by the VTP will burn in the same year, even during a historically bad fire year? If the treatment and the fire are independent events, the chance is much less than one percent. Still, one might argue that the BoF is very good at predicting where fires will occur and putting their treatments there, so the chance is much higher. Unfortunately for this argument, the model used to predict fire hazards in the DEIR has been tested as a predictor for home loss during fires, and it contributed <5% to the model that predicted which homes would burn.[28] According to this test the model used in the DEIR is very bad at predicting where fires will occur in a particular year, as are most models. Fire occurrence has a large random component. Other research in southern California showed that, over 28 years (not one year), 23% of fuel treatments intersected fires in the study area, which means that 77% of fuel treatments went unburned over 28 years, in an area notorious for large wildfires.[29] Even in Southern California, a fire treatment area will most likely never be touched by a fire in a generation.

The upshot is that one cannot analyze the greenhouse gas impacts from a vegetation treatment as if the treatment displaces a similarly sized wildfire on the same spot in the same year. Absent truly improbable events, the treatment will not intersect any fire during the year of analysis. Therefore, greenhouse gas emissions from the treatment will not replace or reduce emissions from a fire that would have burned the same area. Instead, they will be emitted in addition to whatever wildfires occur that year.

Clearly, the analysis of climate change impacts is incorrect, and the VTP will cause substantial, unmitigated greenhouse gas emissions. This section needs to be redone, the individual and cumulative impact of greenhouse gas emissions from the VTP need to be analyzed, and real mitigation measures need to be proposed.

Moreover, the argument used in this section looks similar to the argument that the California Supreme Court ruled was invalid in the Newhall Ranch ruling. We therefore strongly suggest that BoF read that ruling, and incorporate it into designing a better analysis of greenhouse gas impacts and mitigations.

3.B. Why is the basic fire science wrong? In section 4.14.1.2.3.1 "Wildfire versus Prescribed Fire Emissions," the EIR makes the incorrect assumption that carbon dioxide emissions from a wildfire are equivalent to emissions of pollutants caused by inefficient burning. This is incorrect. The basic combustion reaction is that hydrocarbons + oxygen → carbon dioxide + water. The more efficiently this reaction runs, the more carbon dioxide is produces. Inefficient combustion produces soot, particulates, and other air pollutants. Decreasing combustion efficiency increases particulate and other pollution. Increasing combustion efficiency increases carbon dioxide production. There is no way to escape producing some pollutant by manipulating an fire.

As presented in the analysis, highly efficient controlled burns should produce more carbon dioxide emissions, not less. Carbon dioxide emissions thus cannot be controlled by the same processes that control air pollution from fires. They have to be managed separately, either through not burning or through carbon sequestration. Section 4.14 of the EIR needs to be rewritten to reflect this basic reality, as does SPR CC-1, CC-3, and CC-4.

3.C. Why are BIO-5 and BIO-6 mentioned in SPR CC-2 (p.4-434)? These two SPRs have nothing to do with carbon sequestration. The DEIR does need SPRs to deal with carbon sequestration, but it is not CC-2. This SPR needs to be totally rewritten to be useful.

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[28] Syphard, A. D., Keeley, J. E., Massada, A. B., Brennan, T. J., and V. C. Radeloff, V. C. (2012). Housing arrangement and location determine the likelihood of housing loss due to wildfire. PLoS One, 7(3), e33954.
[29] Syphard, A. D., Keeley, J. E., and T. J. Brennan, (2011). Comparing the role of fuel breaks across southern California national forests. Forest Ecology and Management, 261(11), 2038-2048.

3.D. What is the relationship between the VTP and CALFIRE's responsibility for sequestering carbon? Since CALFIRE has responsibility both for administering the VTP, which appears to be only about removing plants, and for carbon sequestration through planting plants, there needs to be an analysis of the impacts of these two programs on each other. After all, they are in fundamental conflict: fire protection seeks to remove plant matter from the landscape, while sequestration seeks to add it to the landscape. One might expect close coordination between these two programs and how they impact each other, yet there is no mention of it in the DEIR. Specifically, the DEIR needs to analyze:

- How will the VTP sequester the CO_2e it produces (see 3.C. above)?
- How will mistakes and accidents increase CO_2e emissions from the VTP?
- What is the rate or probability of CALFIRE controlled burns escaping control and becoming wildfires?
- How are escaped fires controlled, and how much do they burn relative to the proposed size of controlled burns?
- How are impacts from escaped burns assessed individually and collectively across the VTP?
- What happens if an escaped wildfire impacts a carbon sequestration site?
- Can CALFIRE's carbon sequestration programs be used as mitigation for the greenhouse gas impacts generated by the VTP?

3.E. Why did the DEIR ignore the method suggested in the California Chaparral Institute's response to the Notice of Preparation from October 24, 2015? That method would have avoided at least some of the issues raised in 3.A. and 3.D.

4. Why is the DEIR contain so many misstatements based on scientific papers, reliance on anecdotal evidence, and avoidance of scientific advice? We fully support the California Chaparral Institute's comments in their letter of May 24, 2016 ("CCI letter"). Some points we find problematic:

- **Why does the DEIR misquote the science?** The CCI letter contains ample documentation of this, including one scientist denying that his paper said what was implied in the DEIR. We strongly agree with the assessment, and ask the same.
- **Why does the DEIR rely on anecdotal evidence?** This is particularly apparent in the definition of the WUI, which is defined in the DEIR solely in reference to how far embers can fly. As noted in Appendix A of the CCI letter, there is no good science to support 1.5 miles as anything other than a polite political fiction, chosen from overheard conversations at a conference, based on what others might find acceptable. There is no reality behind this anecdote According to the CCI letter and the references therein, the 2009 Bunyip Ridge fire in Australia projected embers 20 km (about 12 miles), while the ongoing Ft. McMurray fire is reported to have projected embers 10 km (about 6 miles). 1.5 miles is insufficient to stop all embers during catastrophic wildfires.

  Worse, 1.5 miles is a silly number. If VTP projects are supposed to clear 260 acres on average, that is 11,325,600 square feet, and a 1.5 mile wide WUI clearance would be 7,920 feet wide. If one does the math, a 260 acre VTP clearance would create a 1.5 mile wide fire break that is 1,430 feet long, and such a firebreak only works if it is pointed directly at the oncoming fire, and somehow the fire doesn't burn down the uncleared sides of the fire break.

Conversely, there is increasing evidence for the utility of 300 feet of fire clearance around structures, and a 260 acre VTP project could be used to create 7.15 linear miles of fire break 300 feet wide. Choosing 1.5 miles at worst leads to silly projects. Why use it at all? Why not try approaches that appear more useful based on repeatable tests of evidence?

5. Why are there so many contradictions within the DEIR? It is riddled with them, and they are non-trivial.

- One example, from page E-3: "California's tremendous diversity in vegetation translates into a similar diversity in fuel types, with a resultant variation in fire behavior throughout the state. Considering statewide variations in fire behavior and the need to characterize it at a workable scale for a statewide environmental analysis, the vegetation of California is condensed into three main groups based on the distinct fire behavior each group exhibits. These groups can be classified as tree dominated, grass dominated, and shrub dominated vegetation formations." Really? Would any firefighter consider white fir and ponderosa pine to have the same fire ecology? How about other pairs of trees and shrubs that have highly divergent fire ecology: sequoia and redwood, lodgepole pine and whitebark pine, chamise and scrub oak? Clearly, the DEIR failed to usefully simplify the complexity, so we are left concluding that the original statement about diversity in fuel types was correct, and that the analysis failed to account for it at all.
- **The contradictions become more problematic when dealing with biological cumulative impacts.** The DEIR states (p 5-24) that "[o]verall, it is impossible to precisely specify at the scale of the state or region both the biophysical and economic ramifications of interaction between disturbance and biological resources."

  Later it says (p-5-24) that "[c]umulative effects occurring at the scale of the state or the region may not inform project level cumulative effects analysis...Cumulative effects, either negative or positive, can potentially impact individual species of concern, the distribution and sustainability of special habitat elements, wildlife, vegetation structures, and other biological resources. Cumulative effects attributable to these kinds of impact mechanisms are generally most reliably assessed at the scale of the individual project and lands immediately adjacent."

  At this point, the DEIR is going against CEQA's intent with PEIRs, as noted in section 1 above. Unfortunately, it goes on to say that (p. 5-25) "[t]he VTP Program EIR cumulative impact analysis, conducted at the scale of the watershed or bioregion, identifies and assesses impact mechanisms that may influence landscape scale biological resource issues such as wildlife movement or habitat capability across broad regions, likelihood of genetic interchange, change in plant community composition as a result of non-native species establishment, or change in species distribution." Really? Where is this analysis? What were its conclusions? This part of the DEIR should be thousands of pages long.

  Finally (p. 5-27) the DEIR states, "[b]ecause of the amount of acreage eligible but not receiving treatment under the VTP, **the proposed Program would likely result in a less than significant cumulative effect on biological resources at the bioregional scale** [emphasis added]. Wildfires would continue to occur in California, having both negative and positive effects on biological resources and wildlife habitat condition; the magnitude of effect being dependent on a wide suite of physical, biological, and climatic variables."

  This is an absurd, contradictory conclusion. It appears to say that, because only 60,000 acres is treated each year out of 22,000,000, there is no cumulative impact at all. Really? An area half the size of Oakland is deliberately burned every year, but that is not significant, because it doesn't burn one-tenth of the state? And an equivalent area is herbicided, grazed, and masticated, but that's not significant, because the project doesn't herbicide, graze, and masticate one tenth of the state? Why does the BoF think this makes any sense at all?

As noted above, it is easy for a single, 260-acre vegetation treatment to wipe out the last stand of old growth chaparral, or to remove critical habitat that causes a sensitive species to spiral towards extinction, or to poison a watershed by accidental release of herbicides into a stream, or to transport a pest or pathogen where it never before existed, or to spark a wildfire that burns thousands of acres, because the crew was impatient and started the fire under inappropriate conditions (as in the 2013 San Felipe Fire). All of these are predictable and analyzable. If such predictable consequences are so hard for the BoF to analyze, why attempt theVTP at all?

If the DEIR is supposed to be a trustworthy document, to meet its Objective 5, to "[p]rovide a consistent, accountable, and transparent process for vegetation treatment monitoring that is responsive to the objectives, priorities, and concerns of landowners, local, state, federal governments and other stakeholders," then **all internal and external contradictions need to be resolved and removed.** How can the VTP be trusted otherwise?

Alternatives to the current VTP and DEIR

When reading the DEIR, one comes away with the overwhelming impression that this is a document written by people who want stuff done without thinking about the consequences. While we understand that impulse, we do not sympathize with it. The problem is that the VTP, if implemented as written, would be the single biggest igniter of wildland fires in California, igniting over 100 every year. While all of these are supposed to be controlled burns, the sheer number of ignitions means that some, eventually, will go out of control and cause damage through simple bad luck. Moreover, the VTP will be the single biggest vegetation-clearer. If the biological SPRs are implemented as written, VTP employees and contractors will become the single biggest danger to sensitive plants in the state. If scientists turn out to be right about fire behavior, most VTP activities will have little or no effect on saving lives or property from wildfires, while spending hundreds of millions of dollars.

This is why we care about consequences. The proposed VTP is far too hulking a program to run it impulsively and not analyze its predictable consequences.

We also care because the VTP simply doesn't add up as written. If 22,000,000 acres are " appropriate for treatment" and 60,000 acres are treated every year, it would take almost 367 years for each appropriate acre to get treated once. That's simply pointless. Old growth chaparral can re-establish itself in well under 367 years. The State of California is less than half that age. If the VTP's goal is truly treat WUI areas, that takes repeated visits every few years. In any case, the VTP can only include a small fraction of those 22,000,000 acres. There's no utility in making the program area unworkably large, and there's especially no point in using the scale of acres appropriate for treatment as a way to evaluate alternatives. Most of the land is untreatable anyway.

Then there is the time scale of preparation. The VTP in its current incarnation has been around since 2013, and its roots go back to the 1990s. That's a long time, and a lot of analysis and project design could have been accomplished in that interval. Unfortunately, the DEIR is still focused on trying to avoid that analysis through a combination of pushing it forward (contrary to CEQA) to individual projects, hiding motivations, padded, repetitive, vague, contradictory and obfuscatory writing, ignoring reality, and simple sloppiness. As a result, the process has wasted years, and is no closer to satisfying CEQA or satisfying people, like us, who will have to deal with the VTP's consequences.

Fortunately, there are workable alternatives:

- **Base the VTP's objectives and strategies on science.** We understand that many firefighters distrust science, so we propose that the term "science" be accepted by the VTP preparers as the stuff that turns out to be true whether anyone believes in it or not. The science that underlies the VTP has to be the things that keep firefighters and others from being burned, properties as safe as possible, and keeps the VTP from being an engine for extinction, type conversion of native lands to weed-fields, and a major vector for pests and pathogens. This is the type of science CNPS tries hard to promote.
- **Create a program that implements those objectives and strategies, again using science.** This is common sense, although some may not see it that way. For example, the DEIR notes that "cost and time to meet environmental review requirements, surveying for and mitigating treatment effects to threatened and endangered species" are major impediments to treating 120,000 acres per year under the existing Vegetation Management Program ("VMP", p. 1-15). Oddly enough, agencies like the National Park Service somehow manage to get programs done within the constraint of environmental review requirements. Is the problem in the requirements, or within BoF's system for meeting them? This is an awkward, but critical question. If the problem isn't with the environmental review requirements, then the VTP is based on a fundamentally wrong assumption, and BoF needs to look at other options for accomplishing its objectives.
- **Front-load the analysis into the PEIR, rather than pushing it down to projects.** This is what CEQA requires. CNPS agrees with the BoF that we need to treat at least some vegetation within 300 feet of homes. We also agree that, in some parts of the state (like some pine forests in the Sierra Nevada), we need more controlled burns. Were the VTP limited to projects that have broad-based support, it would be in place right now. Unfortunately, none of this analysis or consensus seeking went into the VTP or its DEIR. If it had, many of the problems we identify would not exist.
- **Set hard boundaries early.** The math for the VTP simply does not work, and to be blunt, we suspect that a PEIR that realistically tried to analyze the impacts to 22,000,000 acres of any project would be unworkably huge. We are also quite sure that any real VTP will be a small fraction of that size. We are also quite sure that there are projects that everyone wants done. It should not be as hard as the project proponents think to figure out where projects need to be done and are likely to be done, and to focus the VTP down so that it only works on those areas. Indeed, once the VTP has done that, it might be easier to expand it from a small area using supplemental EIRs, rather than trying to deal with an unworkably huge initial project.
- **Follow CEQA exactly, and get the environmental analysts involved at the design stage, not at the end.** The point is to identify critical problems and avoid them through design changes, rather than solidifying the design and being left with a mess to mitigate. Environmental analysts earn their pay because they are, on an per-hour basis, substantially cheaper than lawyers, and sometimes even cheaper than firefighters. Their best role is helping people spot and avoid predictable problems, rather than in covering up issues. Many

southern California developers have learned this advice, and their projects get built without drama. We suggest that state agencies might find it useful as well.

- **Use a multi-year, overlapping planning process for each proposed project.** Since we can expect the climate to get more extreme in coming years (bigger storms, bigger droughts, and so forth), planning for things like burn days for controlled burns is going to be an exercise in patience. Rather than trying to go from plan to treatment in a single year, we suggest using a multi-year process, like the existing VMP, so that areas can be surveyed by professional biologists, local information and buy-in can be sought, and plans can be made ready for when the weather cooperates. Moreover, overlap projects, so that some are being researched while some are being implemented and others are being evaluated afterwards. Rushing will not just make waste, it may make wildfires, injure firefighters, and send species into extinction. Is convenience really worth this price?
- **Consider taking five years to create the next iteration of the VTP.** This is not for our convenience, but because so many things are changing right now:
    - Fire behavior may be changing with climate change, and new types of wildfires may be emerging.
    - California is still developing its climate change response by both limiting emissions and increasing sequestration, and it is fairly clear to us that few people in California government understand its ramifications yet.
    - Pests and pathogens are spreading rapidly, and new ones are showing up.

How much damage can the BoF do by rushing to implement a vague, opaque program at this time? Our strong sense in reading multiple versions of the DEIR is that the people who wrote it really did not understand most of the issues they wrote about, nor did they get help from some really good in-house researchers, such as the fire researchers in CALFIRE. We believe that the BoF needs to take a couple of years to understand and embrace what the 21st Century has in store for it, rather than rushing to implement a bigger version of the 1980s-era VMP. We only wish that this process had started a decade ago, rather than now.

Unfortunately, none of these suggestions change our basic opinion, which is that this DEIR needs to be thoroughly rewritten and recirculated, and that the VTP as written is unworkable. Please take the time to do it right.

Please keep us informed of all future developments with this and related projects. Thank you for consideration of our comments and questions.

Sincerely,

Frank Landis

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The California Native Plant Society is a statewide non-profit organization. Its membership is open to all.

CNPS' mission is to conserve California native plants and their natural habitats, and to increase understanding, appreciation, and horticultural use of native plants.

The Orange County Chapter of CNPS focuses that mission on the native plants and natural vegetation of Orange County and adjacent Southern California.

May 31, 2016

Board of Forestry and Fire Protection
ATTN: Edith Hannigan, Board Analyst
PO Box 944246
Sacramento, CA 94244-246 0
VegetationTreatment@bof.ca.gov

RE: Vegetation Treatment Program Draft PEIR Comments

Dear Ms. Hannigan and Members of the Board:

The Orange County Chapter of the California Native Plant Society has long been concerned that efforts to pre-emptively control wildfire, via "pre-fire" manipulation of the vegetation, do more harm than good to the native vegetation that we work to preserve and enhance. Study of the 2016 version of the proposed Vegetation Treatment Program indicates that it, too, may well do more harm than good to native vegetation in State Responsibility Areas, in Orange County and in the rest of California.

A few specific comments on the VTP:

Comment 1: On Invasive Plants: In Orange County, wildfires are an irregular occurrence in our wildlands, and evolutionarily necessary to its ecological integrity. Invasive non-native plants, however, are a constant threat to that integrity. OCCNPS has an active program to lessen that threat (occnps.org/invasives). We agree with the VTP's Chapter 4.2.2.3.1, especially the first and third bullets:

> A recent thorough study of the relationship between fire and invasive species in California is in a chapter from *The Landscape Ecology of Fire* (Keeley et al., 2011). **Essentially, [the relationship] is much more complicated than previously understood** [emphasis added]. Some of the conclusions are worth including here:

- Fires are natural ecosystem processes on many landscapes. Perturbations to the fire regime, such as increased fire frequency and fire suppression, are the real "disturbances" to these systems and can lead to alien plant invasions.
- In forests, both too little fire and too much fire can enhance invasions. Restoration of historical fire regimes may not be the best way to balance these two risks.
- Repeated fires in shrublands decrease fuel volumes, decrease fire intensity and increase alien plant invasion. Decreasing fire frequency may be the best means of reducing alien invasions.
- Prescription burning that targets noxious species in grasslands is often not sustainable unless coupled with restoration.

The VTP appears **not** to have taken this study to heart. Throughout all parts of Chapter 4.2 that discuss invasive plants, the assumption seems to be that invasion of non-natives after a VTP treatment will be reduced to "less than significant" [but recall the old saying: "Give a weed an inch and it'll take a yard"] by applying Standard Project Requirements BIO-8 and/or BIO-9.

1. BIO-8: "Only certified weed-free straw and mulch is to be used." This SPR is repeated mantra-like throughout Chapter 4.2.2, as if it were the cure-all for weed invasion.

   OCCNPS' long-term experiences and anecdotal observations have shown that:
   - "Certified weed-seed-free" straw usually isn't weed seed free.
   - Applying mulch thick enough to smother weed seeds will also likely smother the native seeds that are already in the soil awaiting overstory removal so they can germinate.
   - Weed seeds (blown-in, bird-dropped, e.g.) are often capable of germinating within mulch and sending roots through the mulch into the soil, thus getting an even bigger head start over native seeds.
2. BIO-9: "The project coordinator is to determine if there is a significant risk of introducing invasive plants and, if so, develop specific mitigation measures using principles outlined the California Invasive Plant Council's *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers* (2012)." This publication is an industry standard. Its BMPs should be integrated from the start into all phases of project planning and implementation—not just consulted at the end, as BIO-9 seems to imply.

OCCNPS suggests removing BIO-8 and replacing it with a rewritten BIO-9:

> New BIO-8: "At the outset of project planning, all who are involved in planning and coordination shall study the most recent edition of *Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers"* (California Invasive Plant Council, cal-ipc.org/ip/prevention/landmanagers.php) and integrate the BMPs it details into all phases of implementation and mitigation."

The use of mulch, including but not limited to "weed-free" straw, can be a BMP. OCCNPS agrees that mulch has appropriate uses.

The best mulch is formed by the vegetation's own fallen leaves, left undisturbed to allow soil organisms to recycle the nutrients in the leaves back into the soil for the roots to absorb again.

Comment 2: On Vegetation Treatment in Southern California: OCCNPS is pleased to see that Chapter 4.2.3, *Mitigation and Standard Project Requirements*, includes recognition that southern California's shrubland vegetation is different from the rest of the state's vegetation types:

> BIO-5: Vegetation treatment projects that are not deemed necessary to protect critical infrastructure or forest health in San Diego, Imperial, Riverside, Orange, Los Angeles, Ventura, Santa Barbara, Kern, and San Bernardino counties shall:
>
> - Be designed to prevent vegetation type conversion.
> - Not take place in vegetation that has not reached the age of median fire return intervals.
> - Not re-enter treatment areas for maintenance in an interval shorter than the median fire return interval outside of the wildland urban interface and excluding fuel break maintenance.
> - Not take place in old-growth chaparral without consultation regarding the potential for significant impacts with the CDFW and the CNPS. **[Comment: More specificity is needed on the purposes and outcomes of this consultation.]**
> - Take into account the local aesthetics, wildlife, and recreation of the shrub-dominated subtype during the planning and implementation of the project.
> - During the project planning phase, provide a public workshop or public notice in a newspaper that is circulated locally describing the proposed project during the project planning phase for projects outside of the WUI. The notification will be used to inform stakeholders and to solicit information on the potential for significant impacts during the project planning phase. **[Comment: Using only a local newspaper to inform the public about projects is not adequate in this electronic age. You have an email notification list, at a minimum derived from the previous VTP iteration and increased by this iteration—use it! CA.gov must have IT staff knowledgable in the use of social media—use them!]**

Comment 3: On Fuel Breaks: The VTP cites Syphard, et al (2011a)[1] but not Syphard, et al (2011b)[2]. Each study shows that fuel breaks within wildlands don't, by themselves, deter or slow the spread of fires; their main value is as firefighter and equipment access to a fire's vicinity. With that in mind, OCCNPS is puzzled that the VTP would include fuel breaks as a valid method of wildfire control. Furthermore, several studies cited in the VTP show that fuel breaks are likely to be sites from which non-native plants invade wildlands—this corroborates our long-term

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1. 2011a: Syphard, A.D., J.E. Keeley, T.J. Brennan. *Factors Affecting Fuel Break Effectiveness in the Control of Large Fires on the Los Padres National Forest, California*. International Journal of Wildland Fire 20.6 (2011): 764-775
2. 2011b: Syphard, A.D., J.E. Keeley, T.J. Brennan. 2011. *Comparing the Role of Fuel Breaks Across Southern California National Forests*. Forest Ecology and Management 261(2011): 2038-2048. doi: 10.1016/j.foreco.2011.02.030.

anecdotal observations. Why would anyone want to expend the time, effort, and funds to install and maintain fuel breaks, when fuel breaks don't do what they're intended to do, and are an entryway for invasives into wildlands?

Comment 4: On WUI in OC: The VTP's requirement of a 1.5-mile-wide buffer zone at the WUI is unrealistic in Orange County. The Fire Hazard map at right shows that all OC's SRA Zones are bounded if not surrounded by incorporated development. OC's WUI is our reserve lands: some are in SRA Zones and some are in incorporated areas. The SRA Zones are:

1. The OC portion of Chino Hills State Park, about 1/3 of the whole park.
2. The Santa Ana Mts. foothills, a patchwork of five OC nature parks, small-acreage private lands, and inholdings in the National Forest.
3. Rancho Mission Viejo—the yellow areas are now much extended as development proceeds—and Caspers (county)Wilderness Park and Starr Ranch Audubon Sanctuary.
4. Crystal Cove State Park and Laguna Coast and Aliso and Wood Canyons (county) Wilderness Parks.

Applying a 1.5-mile "buffer" of vegetation treatment in the Zones' state and county parks would remove most if not all of the parks' vegetation and the habitats it forms—i.e. removing the very reason the parks were set aside under NCCP or similar mitigation agreements.

OCCNPS does agree that it is necessary to do some vegetation treatment in the WUI, to help protect homes from wildfire. Such treatment must be part of an overall fire-safe program that starts from the house and works out, rather that working in from the wildland.

Thank you for the opportunity to comment on the VTP EIR.

Respectfully,

Celia Kutcher
Conservation Chair

CALIFORNIA
NATIVE PLANT SOCIETY

VIA U.S. and Electronic Mail February 25, 2013

George Gentry, Executive Officer
State Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

E-mail: VegetationTreatment@fire.ca.gov

Re: Draft Programmatic Environmental Impact Report for the Vegetation Treatment Program of the California State Board of Forestry and Fire Protection (SCH #2005082054)

Dear Mr. Gentry:

The California Native Plant Society appreciates the opportunity to comment on the Draft Programmatic Environmental Impact Report for the Vegetation Treatment Program of the California State Board of Forestry and Fire Protection (Program, or VTPEIR).

The California Native Plant Society (CNPS) works to protect California's native plant heritage and preserve it for future generations. CNPS promotes sound plant science as the backbone of effective protection of natural areas. We work closely with decision-makers, scientists, and local planners to advocate for well informed and environmentally friendly policies, regulations, and land management practices.

CNPS supports appropriate land management practices that will result in the protection and sustainability of special status California native plant species and plant communities. We strongly agree that fire and invasive species are critical issues that must be actively managed. However,

CNPS strongly recommends that this VTPEIR NOT be certified in its present form, due to:

- **Its pervasive lack of substantial evidence to support contentions and conclusions made throughout the document.**
- **Its substantial procedural lapses and irregularities.**
- **Other issues listed below.**

I. QUESTIONS AND CONCERNS

CNPS' study of the VTPEIR has brought up many questions:

1. Why does it contain so many procedural lapses and irregularities?
2. Is it based on adequate science?
3. Have all the impacts have been properly considered?
4. Are the Alternatives reasonable and have they been well analyzed and considered?

5. Will mitigation of the impacts considered be monitored to determine that the impacts fall below the level of significance?
6. Can the Program as proposed meet its stated goals? Would doing nothing (the Status Quo Alternative) better achieve the goals? Can the Program managers determine whether the Program meets any of its goals?

The following groups of questions are based on the concerns summarized above. We formally request that the Board of Forestry fully consider and respond to our questions in order to clarify, among other things, the purpose, rationale, and management structure of the Draft VTPEIR.

1. PROCEDURAL LAPSES AND IRREGULARITIES

1.A Why is the Report an EIR, not an EIR/S?

In Chapter 2: Proposed Program (Page 2-1), the VTPEIR states:
"The 38,000,000 acres that might be treated under the Proposed Program are comprised of about 34,958,000 acres, which are either privately owned or State owned lands (e.g. Department of Parks and Recreation (DPR) lands) that are designated as SRA or LRA, and about 3,000,000 acres of federal DPA lands (see glossary for description of DPA)."

And from the VTPEIR Glossary:
"Federal DPA are lands that would normally receive fire protections services from CAL FIRE; however, due to efficiency of operations these lands receive fire protection from federal agencies according to written agreements with CAL FIRE."

A project on federal land, requiring a federal discretionary permit, entitlement, authorization, or receiving federal funding is subject to NEPA. Why is the VTPEIR not a joint EIR/EIS? How will a NEPA analysis be accomplished for projects on federal land?

1.B How was the Notice of Availability publicized?

CEQA Guideline 15087 states:
"Notice ... shall also be given by at least one of the following procedures:

> *"(1) Publication at least one time by the public agency in a newspaper of general circulation in the area affected by the proposed project. If more than one area is affected, the notice shall be published in the newspaper of largest circulation from among the newspapers of general circulation in those areas. (2) Posting of notice by the public agency on and off the site in the area where the project is to be located. (3) Direct mailing to the owners and occupants of property contiguous to the parcel or parcels on which the project is located. Owners of such property shall be identified as shown on the latest equalized assessment roll."*

Normally, EIRs include an appendix documenting their public notices. The VTPEIR fails to provide this information. What is more, we failed to find a Notice of Availability using online searches of:

- The *Los Angeles Times* (http://classifieds.latimes.com/classifieds?category= public_notice). (According to Wikipedia, the *Los Angeles Times* has the largest distribution of California newspapers).
- The *Sacramento Bee* (http://www.sacbee.com/adperfect/).

- The *San Francisco Chronicle* (http://www.sfgate.com/ chronicle/).
- The *San Jose Mercury News* (http://www. mypublicnotices.com/BayAreaNewsGroup/PublicNotice.asp).
- The *UT San Diego* (http://www. legalnotice.org/pl/sandiego/landing1.aspx).

The website legalnotice.org covers legal notices in newspapers throughout the US, and we were unable to find the VTPEIR noticed there. Since the project site is not defined, posting the notice on and off-site was not practicable.

We found no evidence of public notice beyond the Project website itself. For example, a CNPS member owns property immediately adjacent to State Park land. This land contains chaparral and coastal sage scrub, and has been the periodic target of vegetation management. Nonetheless, this person did not receive any written or emailed notice about this program. How was the Notice of Availability publicized?

1.C Where is the Environmental Checklist? How will the Checklist protocol described preclude EIRs for projects under the Program?
The proposed Program relies on the creation of an environmental checklist to streamline environmental review of projects instituted under the Program. Chapter 8: Environmental Checklist contains a set of descriptions for generating an initial study, however there is no Environmental Checklist in the presented in the VTPEIR.

Because
a) the VTPEIR fails to provided substantial evidence to support conclusions that adverse effects to botanical resources from Program implementation will not be significant for any treatment type, in any bioregion (e.g., Table 3.11 and Table 5.5.3.1), and

b) the landscape constraints (LCs), Minimum Management Requirements (MMRs), and mitigation measures meant to ensure that impacts to special status plant species and plant communities will be reduced to less than significant are insufficient (see #1.E, #3.B below),

the checklist relying on the conclusions and measures mentioned above, and generated per the vague specifications in Chapter 8 will neither comply with CEQA, nor replace a CEQA initial study.

Given the Program's lack of specificity regarding vegetation types affected, its reliance on outdated, incomplete, and questionable science, on obsolete vegetation maps, and its failure to explain how local interested parties would participate in the local implementation of MMRs, a project proposed under the Program described in the draft VTPEIR would face fewer obstacles were it to generate its own EIR independently.

1.D Where is the Program Map, and what parcels are subject to the Program?
CEQA Guideline 15124(a) states:
"The precise location and boundaries of the proposed project shall be shown on a detailed map, preferably topographic. The location of the project shall also appear on a regional map."

Neither of these maps is supplied. While maps of California and bioregions are presented, only approximately 1/3 of the state is actually affected by the Program--so these maps are inadequate for land owners to determine whether they are affected by the Program or not.

How can the Report represent that the impact analysis is sufficient, if neither the place nor the timing of the Program are given? Environmental impacts must, by definition, have an environment in which to occur. Phrasing the acreage as "might be treated" is insufficient. If a parcel is considered eligible for the Program, then the Program has a boundary, and all parcels within that boundary must shown on maps, to circumscribe the environment impacted by the Program.

Where are the maps delineating clearly and exactly the boundaries of Federal, State and local jurisdictional parklands?

Where are the maps delineating clearly all the locations of Cal Fire stations, fire camps and other property and structures under the management or ownership of Cal Fire?

Where is there any map showing clearly the location of rivers, watersheds, streams, reservoirs, lakes, dams, deltas?

Is the map of Fire Safe Councils in Figure 2.10 considered an accurate map of locations? Is it considered suitable enough for one to assess where their local consultation in the CEQA process might apply?

Where are maps on the County level showing accurate property and parcel information necessary for those involved in the CEQA process? Why isn't this PEIR following CEQA guidelines and presenting general, then more detailed information at a county or regional level for landowners and users?

1.E Why does the Report state that floristic surveys "may be necessary" when CEQA states that they are mandatory?

On page 2-6 of the VTPEIR, MMR 5 states:

"A database search will be conducted for each project by a query of the most reasonably available sources and databases for biological information, including but not limited to, the CNDDB and BIOS. The search shall include a minimum search area of nine (9) USGS Quadrangles surrounding the project area. In cases where the project area extends into multiple quadrangles all adjacent quadrangles shall be included. Surveys may be necessary to determine presence/absence of special status plants or animals and to determine and evaluate site-specific impacts. The applicant will evaluate the potential direct and indirect impacts caused by the Project."

CEQA guideline 15125 states:

"An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published."

Floristic surveys are a fundamental part of describing the environmental setting for the project. A 9-quadrangle or CNDDB search is an essential first step to determine which sensitive species and rare natural communities might be present on the project site. All databases are known to be incomplete, sometimes radically so. They cannot be relied upon to determine conclusively either the presence or the absence of any sensitive species. What's more, private lands are largely unsurveyed. Current surveys of project sites are absolutely necessary to determine what occurs on project sites. Why does the Report state that these are optional, i.e., may be necessary? How does this comply with the California and national Endangered Species Acts and agency regulations for implementing these Acts?

1.F Where are the opportunities for external consultation with local agencies and/or community groups in relation to implementation of Minimum Management Requirements?
At the local level, projects are meant to be responsive to the MMRs listed in Chapter 2.3 of the VTPEIR. Examples of MMRs with a nexus to plant issues in which CNPS and others would have interest include MMR 5 and MMR 6. These state:

> *"5. A database search will be conducted for each project by a query of the most reasonably available sources and databases for biological information, including but not limited to, the CNDDB and BIOS. The search shall include a minimum search area of nine (9) USGS Quadrangles surrounding the project area. In cases where the project area extends into multiple quadrangles all adjacent quadrangles shall be included. Surveys may be necessary to determine presence/absence of special status plants or animals and to determine and evaluate site-specific impacts. The applicant will evaluate the potential direct and indirect impacts caused by the Project. The wildlife agencies shall be notified in writing with the Project scoping information (including the evaluation of direct and indirect impacts and the results of the database search), and asked for comments and recommendations.* ***The lead agency as a result of consultation with the appropriate State or Federal agencies, or a qualified biologist, will modify project design, and/or incorporate mitigation to avoid significant adverse environmental impacts to special status species and other species****. [Emphasis added] If avoidance is not possible, appropriate take permits (Federal Endangered Species Act (ESA) or California ESA) will be required.*
>
> *6. No new roads (including temporary roads) may be constructed or reconstructed (reconstruction is defined as cutting or filling involving >50 cu. yds/0.25 linear road miles). Existing roads, skid trails, fire lines, fuel breaks, etc. that require reopening or maintenance shall have drainage facilities (see Glossary) applied at the conclusion of the project that are at least equal to those of the California Forest Practice rules."*

According to the text in bold font above, there appears to be no exterior consultation requirement for local agencies, or other interested community groups or individuals during the development or implementation of Minimum Management Requirements. Evaluation at the local level has essentially been internalized within government agencies.

Both the preferred project and the alternatives set up a Program whose structural approach has no provision for consultation with local interests knowledgeable in local conditions concerning ecosystem integrity or with local experience concerning impacts.

The following would more clearly describe the transparency and disclosure of information during the review process for projects that tier from the VTPEIR:
1. A flow chart illustrating;
a) lead agency decision points for a project that would navigate through the VTPEIR, from submittal of application to post-implementation monitoring and maintenance,
b) where in the process opportunities for local public consultation on a project would occur under the Program, and
c) how and when in the process the lead agency is required and/or would make available notifications of these opportunities.

2. A table comparing the opportunities for public consultation that would be available under the VTPEIR to opportunities available under current Vegetation Management Programs.

How will the VTPEIR incorporate local consultation into the structure of the Program beyond what is currently presented?

1.G Why doesn't the PEIR concentrate on the land use planning and defensible space policy components of the California Fire Plan?
Chapter 1.3: Regulatory Authority, states the California Fire Plan (BOF, 2010), as authorized under Public Resources Code Sections 4114 and 4130, has the following major policy components:

- Land use planning that ensures increased fire safety for new development.
- Creation of defensible space for survivability of established homes and neighborhoods.
- Improving fire resistance and structural survivability of homes and other constructed assets.
- Fuel hazard reduction that creates resilient landscapes and protects the wildland and natural resource values
- Adequate and appropriate levels of wildland fire suppression and related services
- Commitment by individuals and communities to wildfire prevention and protection through local fire planning

Recent research and publications[1 2] show that land use planning appears to be more important than fuel modification for reducing fire hazards. Additionally, replacing woody fuels with herbaceous fuels appears to increase fire risks to homes, and treating the wildland-urban interface is critical for making homes safe.

This VTPEIR recognizes the problems that stem from California's increasing population that is increasingly encroaching into wildlands or into wildfire-prone topography. Cal Fire emphasizes the importance of the first thirty feet from a house or other structures as the most importance area of defensible space. Why has the VTPEIR not included Program elements that concentrate resources toward implementing defensible landscaping within the first thirty feet from structures, in all jurisdictions?

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[1] Syphard, et al . *2012. Housing arrangement and location determine the likelihood of housing loss due to wildfire*. PLoS ONE 7(3): e33954
[2] http://www.cnps.org/cnps/publications/ fremontia/Fremontia_Vol38-No2-3.pdf, and references therein.

2. THE REPORT'S USE OF SCIENCE

The Program description lacks substantial evidence to justify fundamental premises, is inaccurate, and overly simple. It is based on a number of unjustified assumptions that ignore best available science. In very many instances the VTPEIR cites inappropriate, irrelevant, or refuted references. We note the extensive descriptions of the VTPEIR's scientific failings as detailed in comments submitted by both the California Chaparral Institute and the Endangered Habitats League, which we incorporate herein by reference.

2.A How can CEQA be appropriately applied to the VTPEIR in a Program sense when groups of projects addressed as similar within the Program are NOT similar in impacts, and when potential impacts of groups of projects can NOT be avoided or mitigated in a similar manner?

In Chapter 1.6 of the VTPEIR, the Report states,

> *"An agency is generally not permitted to treat each separate permit or approval under a program, such as the VTP, as a separate project segment if the effect is to avoid full disclosure of environmental impacts. However, CEQA does encourage the application of a programmatic approach* ***where a group or series of projects are similar in activities and impacts and where potential impacts can be avoided or mitigated in a similar manner."*** [emphasis added]

One of the overriding problems in the document is the simplistic approach that attempts to make fire issues out as broadly similar across the region, when in fact they are very different. For example, the VTPEIR does not distinguish between surface fires in ponderosa pine and crown fires in chaparral, nor does it explain how these different fire regimes, having been affected by very different past fire management activities, now require very different approaches to future management. Nevertheless, the VTPEIR treats both fire regimes similarly by employing a simple one-size-fits-all premise upon which to base the rationale for treatments and impact analyses, in short - increasing treatments will result in less frequent and less severe uncontrolled burns (based on "the 35% level," section 5.2.4) and increased treatments pose no significant impacts to the environments treated (Table 3-11 and Table 5.5.3-1).

Much of the literature supporting treatments comes from surface fire regimes in coniferous forests and therefore is not appropriately applied to shrubland ecosystems. One important example of where these two ecosystems differ markedly is in the impact of fire severity. High severity fires have some negative impacts on certain forest types. However, shrubland ecosystems are highly resilient to high severity fires and in fact one of the major threats, alien plant invasion, is promoted by low severity fires. Does Cal Fire recognize the fact that, in southern California, wildfire frequency intervals have become so short as to threaten the continued existence of natural habitats such as chaparral, inland sage scrub, pinyon-juniper, and coastal sage scrub? These habitats are the ones stabilizing and protecting our watersheds in highly erodable mountain and hill ranges. If so, why does the VTPEIR conclude that more frequent, low intensity prescribed burns in South Coast chaparral will provide a benefit to this vegetation type?

Similar groups or series of projects, and similar impact avoidance/mitigation measures could be identified only through categories of ecosystems within finer geographic regions, and only among finer vegetation classifications than are presented in the VTPEIR. The similar treatment of vastly different vegetation types operating under different fire regimes, the broad characterization of program area (i.e. all of California) and landcover types (CWHR classifications) as presented in the draft VTPEIR grossly oversimplify the "similarities" intended to justify a program approach to the CEQA. All this makes it impossible to assess "full disclosure of environmental impacts" of treatments, which obstructs the Board of Forestry's ability to certify this draft VTPEIR under CEQA.

2.B Where is the substantial evidence to support the VTPEIR's plan to increased burning across the Program area's bioregions by 36%?
In Table 2-4, Proposed Program Treatment Acreage by Bioregion, the VTPEIR indicates the Approximate Annual Acreage Treated during the ten-year program period is 216, 910 acres. The VTPEIR also states that 53% of vegetation treatments will be prescribed burns. Therefore each year 115,000 acres will be burned under this program. At page 4.2-3, historical wildfire trends are estimated (since late 1800s) to average 320,000 acres burned per year in California. The Program will increase the number of acres burned (generally in wildland habitats) by 115,000 acres per year. How does the PEIR justify increasing the acreage burned by 36%?

2.C Where is the substantial evidence to support the increase in chaparral treatment planned in the VTPEIR?
Where is the justification for burning, masticating/mechanically clearing, and eventually degrading and destroying southern California chaparral and sage scrub in areas where these plant habitats are forming deep, complex root systems, sequestering vast amounts of carbon, stabilizing slopes, preventing soils from becoming hydrophobic, acting as guardians of broad steeply-sloping watersheds and providing nesting, resting and food sources for a highly biodiverse wildlife, both resident and migratory? These habitats need 40 to 100 years to recover from fires, replenish their seedbanks, restore their canopies and replenish their root systems.

2.D Where is the substantial evidence to justify increasing the number of acres to be treated, generally by burning or mechanical removal, from 34,824,500 to 37,958,400?
Where in the VTPEIR is there provided evidence to substantiate the purported need to increase treated acres in order to achieve Program goals?

2.E Where is the substantial evidence that supports the evaluation of effects from non-native invasive species?
Assessment conclusions in the VTPEIR lack clear, supporting evidence. After stating under cumulative impacts that areal quantification of cumulative impacts cannot be known (see under cumulative impacts) the VTPEIR boldly states what the effects will be. An example is Table 5.5.2, Summary of Effects from Non-Native Invasive Species from Implementing the Proposed Program. This takes each bioregion and assesses the effect on weeds from the Program's use of Prescribed Fire, Mechanical, Hand, and Herbivory treatments. For every region the chart states NA/NB - negligible adverse or beneficial effects - those effects that are imperceptible or undetectable. The document presents no quantitative evidence in support of this evaluation, but the narrative does describe many examples where each of the fuel treatments can make the

invasive species situation worse. This has been made very evident from regular wildland fire fighting, where the equipment used to fight the fire is frequently “dirty” regarding alien seeds.

2.F How will the Program "modify wildland fire behavior to help reduce catastrophic losses to life and property consistent with public expectation for fire protection?" How will the VTPEIR "reduce the severity and associated suppression costs of wildland fires by altering the volume and continuity of wildland fuels." (Page ES-ix)
These questions are mutually dependent. The Program's assumption that wide scale vegetation treatment will reduce catastrophic losses to life and property is not supported by current science (e.g. Syphard et al 2012, noted above). Rather, evidence suggests that these goals are better met through urban planning, updated building codes, and focusing fuels management on the Wildland-Urban Interface. Indeed, intensive management of wildland fuels is more likely to replace hard-to-ignite woody vegetation with highly ignitable herbaceous vegetation, increasing the likelihood of fires that destroy lives and property. Why wouldn't doing nothing have an equal, if not greater, likelihood of reducing fire danger?

2.G Why would the Program "reduce the risk of large, high intensity fires by restoring a natural range of fire-adapted plant communities through periodic low intensity vegetation treatments?" What is the evidence that varying "the spatial and temporal distribution of vegetation treatments within and across watersheds to reduce the detrimental effects of wildland fire on watershed health" would work? Where is the evidence that the Program would "improve wildlife habitat by spatially and temporally altering vegetation structure and composition, creating a mosaic of successional stages within various vegetation types?" (Page ES-ix).
These are similar goals with the same shortcoming. There is little evidence, especially in southern California, that a mosaic of plant communities impedes fire progress. There is, additionally, little evidence that the proposed Program will result in a true vegetation mosaic. After all, it takes a century to grow a 100 year-old plant, and most California plant communities can last at least that long between disturbances. The proposed regime will result in a mosaic of early successional communities that are likely highly susceptible to invasive species, likely inefficient at capturing and retaining nutrients and greenhouse gases, and incapable of supporting late-successional species. The disturbance by "low intensity vegetation treatments" is also likely to introduce invasives that increase the ignitability of otherwise intact vegetation[3] Why would the Status Quo Alternative 1 not have an equal, if not greater, likelihood of accomplishing the three goals questioned above than any of the other Alternatives or the Program?

2.H What is the evidence that the Program would "maintain or improve long term air quality through vegetation treatments that reduce the severity of large, uncontrolled fires that release air pollutants and greenhouse gases?" (Page ES-ix). The California Air Resources Board (CARB) has guidelines in place both for prescribed burning and wildfires. There is no evidence that the VTPEIR has coordinated with the CARB to determine whether the Program complies with current guidelines. It is unclear whether the proposed controlled burns and destruction of plants will result in net improvements to air quality, and whether they will likely release as much greenhouse gases as wildfires would.

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[3] Lambert et al., 2010. in http://www.cnps.org/cnps/ publications/fremontia/Fremontia_Vol38-No2-3.pdf, and references therein.

2.I What is the evidence that the Program would "reduce noxious weeds and non-native invasive plants to increase desirable plant species and improve browse for wildlife and domestic stock?" (Page ES-ix)
The Proposed Program will likely increase the populations of non-native invasive plants. What and where is the evidence that the Program will accomplish the goal of not doing that?

2.J Why does the VTPEIR assert that biomass burning will ameliorate climate change?
The Report repeatedly considers biomass burning as a renewable resource that will help ameliorate climate change (e.g. 4.4-18, 4.11-6). This seems mistaken on three levels. First, biomass holds carbon out of the air, while burning it returns the carbon to the air. This short-circuits biological processes that take carbon out of the air and sequester it back in the ground or in biomass. If we practiced nothing but biomass burning, we would retain our high levels of atmospheric CO_2 indefinitely, so this solution prolongs the problem. Second, plants contain more than just carbon and energy. Burning biomass will release large quantities of nitrogen, and nitrogen deposition has already been shown to favor non-native invasive species.[4] This will exacerbate both air pollution and invasive species problems. Undisturbed native vegetation can effectively exclude most exotics, sequesters carbon, and sequesters nitrogen. Therefore, leaving the vegetation intact helps to solve three problems, while burning it exacerbates all three.

2.K Why does the VTPEIR cite Wildland Task Force August 2003 *Mitigations Strategies for Reducing Wildland Fire Risks*?
On page 4.2-8, the VTPEIR states that,
"In its August 2003 report, the San Diego Wildland Task Force agreed that fuel or vegetation management is the single most effective tool available to mitigate fires."

Its authors withdrew this report after protest by the scientists cited, and over numerous errors, and a fictitious citation.[5] Why was a retracted report used to support a premise of the VTPEIR?

3. WERE ALL IMPACTS CONSIDERED?

3.A Why does the Report not provide a full list of special status plant species and rare plant communities potentially impacted by bioregion in the Program?
The VTPEIR lists special status plants and rare plant communities potentially impacted by treatments by bioregion, but limits these lists to those "with the most occurrences" per bioregion (Tables 5.3.3.12-21). Appendix B appears to be a list of most or all plant taxa on CRPR 1A, 1B, and 2 lists, and all FESA / CESA listed plants in California. The lists make little or no sense for several reasons, among them:

<u>Tables 5.3.3.12-21</u>
a) The VTPEIR states,
"In order to ensure that impacts to special status plants and communities would be less than significant, the BIOS database was used to obtain lists of species and communities with the most

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[4] Allen et. al. 2009. http://www.plantbiology.ucr.edu/faculty/ Allen et al. 2009.pdf.
[5] http://www.californiachaparral.com/images/Letters_to_SD_County_Oberbauer.pdf).

*element occurrences by bioregion. Many plants in the database have very small, localized populations. <u>These would not be impacted at the **programmatic** level because project level assessment carried out by local DFG biologists or other qualified botanists would identify these populations and lead to the application of necessary mitigations as stipulated in MMR 5</u>. On private land in particular, where the extent of rare plant occurrences is largely unknown, the scoping process would likely lead to surveys being done prior to project implementation. California Rare Plant Rank 1B and 2 will be treated as state or federal listed species for the purposes of developing mitigations at the project level (see the BIOS/CNDDB Element Ranking Key later in this chapter). Special Status plants and communities with more widespread occurrences potentially could be adversely affected at the programmatic scale."* p. 5.5-93 [underline added]

For the VTPEIR to state that impacts to plant species and communities with restricted ranges would not occur at the programmatic level is nonsensical. The VTPEIR describes vegetation treatments whose potential for impact on *any* species occurring at a treatment location is the same regardless if a species' distribution is broad reaching or narrowly restricted. If a species occurs in only small, localized populations but those populations coincide with treatment locations, they will be impacted by the Program.

How then did the VTPEIR determine which species or communities would or would not be potentially affected by the Program for its impact analysis? It is unclear which plant species other than those listed by bioregion in tables 5.3.3.12-21 were included in Program impact analyses, or what rationale was used for their inclusion other than,

"...the cutoff for inclusion was necessarily arbitrary." p. 5.5-13, or

"Available spatial data from various sources (mostly CAL FIRE) was synthesized into watershed-based evaluations ...using logic developed by CAL FIRE staff." p. Appendix A-1.

<u>Appendix B</u>
b) The Program does not affect <u>all</u> listed plants, it affects a subset of them. For example, the list presented in Appendix B includes plants such as the extremely rare *Cercocarpus traskiae* which should not be subject to vegetation treatment under this or any Program. Nor will a wide selection of beach dune plants (e.g. *Acmispon nuttallianus* (= *Lotus n.*), *Phacelia stellaris*, and *Nemacaulis denudata* var. *denudata*) that mostly occur on urban dunes, in small areas that are highly unlikely to ever come under any of the vegetation treatments proposed. Why was this subset not identified?

Inclusion of these and other plant taxa in Appendix B list is troubling when one considers that certification of the VTPEIR provides regulatory authority to carry out treatment actions addressed in the VTPEIR.

3.B How will VTPEIR MMRs and mitigation measures that call for CalFIRE to consult with CA DFW achieve desired outcomes (to reduce impacts to less than significant) when, in practice, CalFIRE ignores DFW recommendations to conduct plant surveys and mitigate for project impacts to plants?

The VTPEIR continually defaults to a conclusion that impacts to species not included in the Program's impact analyses, as described in Appendix A and Chapter 5, will be less than significant when implementing MMR 5. For example,

"Appendix B lists the special status wildlife species considered herein. Some potential exists for substantial adverse effects, but MMR 5 should prevent them." p. 5.5-13

According to MMR 5, surveys "may be necessary," the applicant will determine if impacts will result from treatments, the lead agency will consult with a local DFW biologist, and if avoidance is not possible, FESA / CESA take permits will be required. MMR 5 fails to ensure prevention of substantial adverse effects for the following reasons:

1. Surveys will be necessary if suitable habitat for special status species exist and surveys have not previously been done, or have not been done within 3 years, following USFWS protocols. MMR5 does not clearly require this, leaving the requirement for surveys as optional.

2. The applicant should not be the one to determine if impacts will result from a treatment, this should be evaluated by botanists, plant ecologists, and/or biologists. Mitigation should include monitoring of the mitigations' success.

3. The VTPEIR describes project applications being administered through local CalFIRE units. Thus CalFIRE will consult with DFW to obtain recommendations regarding when floristic surveys will be required, and if project impacts are found to be significant. However, CalFIRE has, in practice, dismissed recommendations from DFW to prescribe exactly these types of plant survey and mitigation requirements. In recent years, the CA DFW (then DFG) has issued letters of non-concurrence to CalFIRE for the latter's refusal to require special status plant surveys and to follow avoidance recommendations provided by DFW on timber harvest plans[6]. How will the implementation of MMR 5 differ from current practices?

4. If avoidance of project impacts to non-FESA/CESA listed CRPR 1B, 2, and 4 (if found to be locally significant) species is not possible, FESA/CESA permits will not be required for these species. However mitigation for impacts to these species will still be required under CEQA, and/or under many existing local (General Plans) and regional land-use or conservation plans. Will VTPEIR MMR 5 ignore these requirements?

3.C What consultations were performed with the California Water Resources Board, Regional Water Control Boards, California Air Resources Board, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, the Army Corps of Engineers, The Environmental Protection Agency, the US Forest Service, and the National Park Service? What other agencies should have been consulted that were not?

Normally, all consultations are included in the EIR as appendices--but the Report does not include <u>any</u> information about consultations. Providing the text of such consultations would help determine how the impacts were determined, and whether all impacts were determined to the satisfaction of the responsible agencies.

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[6] THP #2-08-009-SIS(6), "Big Red"; THP #2-09-011-SIS(6), "Crater Lake 2009"

3.D How does the Program comply with the CARB Smoke Management Program of 2000?
The report appears to assume that the CARB has yet to develop a Smoke Management Plan (Page 4.6-2). According to the CARB website, the CARB adopted a Smoke Management Plan in 2000[7], and guidelines are available online. It appears that the proposed Program will render the state out of compliance with EPA guidelines, and it is unclear whether the Board of Forestry consulted with the Air Resources Board both on these impacts and on mitigating them.

3.E Why was the WHR system used?
The CA Wildlife Habitat Relationships system is obsolete and does not comply with the National Vegetation Classification Standards (NVCS)[8]. It has been superseded by the *Manual of California Vegetation, 2nd Edition*[9] (MCV2), which does comply with national standards. The 2nd edition of *Manual of California Vegetation* represents the most detailed description of California vegetation available in 2013, and is based on modern field surveys done over a large portion of California. The MCV2 uses the National Vegetation Classification Standards (NVCS) to define rare plant communities Alliance and Association-level vegetation classifications. Plant communities with a state rank of S2S3 or less, as referenced in the VTPEIR, are defined using NVCS Alliance and Association classifications. Some, but not all, of the S1-S3 plant communities are listed in the CNDDB. Alliance-level vegetation maps for California are available on BIOS. Why not seek as accurate a vegetation dataset as is available?

Why was the WHR chosen? Why did the VTPEIR not incorporate the wealth of fire characteristics given for vegetation types in the MCV2?

How will the Program fit current, compliant, maps of California vegetation into the inadequate, outdated framework of the WHR? Wouldn't the current system provide more information for less effort? Won't such problematic mapping generate significant ecological impacts due to errors and data loss? How will the Program mitigate for such problems?

3.F How will the Program assess cumulative effects to unique or rare vegetation Alliances?
The VTPEIR assesses the degree of treatment impacts to vegetation types by calculating the percentage of WHR vegetation types being treated by bioregion. The VTPEIR also calls for the avoidance of special status plant communities with a state rank of 3.2 or lower. Mitigation measure 5.5.3-2 states,
"*Mechanical treatment shall be avoided to the greatest extent possible in special status plant communities with a state rank of 3.2 or lower. If mechanical treatment cannot be avoided, impacts will be mitigated on an acre-for-acre basis by enhancing or restoring the same community type elsewhere in the region.*"

These special communities are defined at the NVCS Alliance classification level. It is not possible to assess the effect of treatments, either at the Program or project level, on rare vegetation Alliances and Associations by using WHR vegetation types. What's more, it is premature to conclude that Program treatments will have no significant or cumulative effects on

7 http://www.arb.ca.gov/smp/ smp.htm
8 http://www.fgdc.gov/standards/projects/FGDC-standards-projects/vegetation/NVCS_V2_FINAL_2008-02.pdf/.
9 Sawyer, Keeler-Wolf and Evens, 2009. A Manual of California Vegetation, 2nd Edition. California Native Plant Society. Sacramento, CA. 1300 pp.

rare natural communities when the effect of prescribed burning on rare communities has not been analyzed.

It is not possible to identify, let alone assess, Program impacts to rare plant Alliances using WHR classifications. How will the Program assess effects to rare (S1-S3) vegetation Alliances and Associations?

Regarding mitigation measure 5.5.3-2, special-status plant communities must be avoided or mitigated through compensatory mitigation since enhancing or restoring these communities is likely unfeasible. Due to the unique nature of these habitats that are often associated with specific types of bedrock, soil, and climate interactions it would be unreasonable to assume it could be recreated elsewhere as a mitigation measure.

3.G Why has the PEIR not analyzed the potential for wildlands vegetation clearing to promote new developments, thereby expanding the WUI treatment scenarios?

The VTPEIR Executive Summary (p. xii) states,

"The proposed program will not have any growth-inducing impacts because it will not foster growth or result in new housing or construction of facilities. Based on the above conclusion, no reasonably foreseeable growth-inducing impacts have been identified that would result from implementation of the Proposed Program or the Alternatives of the Program."

Despite the summary conclusion of this statement, the emphasis of vegetation treatment (= clearing) at the WUI provided in the VTPEIR would provide counties a CEQA-certified tool to clear vegetation, under a guise of fire safety, and subsequently build in the type-converted wildlands.

Rather than present summary conclusions of no foreseeable growth, the VTPEIR must provide clear narrative describing how vegetation treatments related to the WUI are specific to fire and habitat management objectives, and that they are not meant to provide avenues for future development at the WUI.

4. ARE THE ALTERNATIVES WELL-ANALYZED AND CONSIDERED?

The four alternatives to the proposed program offer to either maintain the current Vegetation Management Program (VMP) instead of adopting the proposed one, or to eliminate/minimize aspects of the proposed program for herbicide use, water quality, or air quality.

4.A Alternative 1, Status Quo: How are the current Vegetation Management Programs (VMPs) collectively unable to meet the goals of the proposed Program and Alternatives?

The VTPEIR does not address how the goals of the existing VMPs are being constrained by water quality and air quality issues that are driving the need for Alternatives 3 and 4 presented in this VTPEIR. Is it possible for current collection of programs to meet the goals of the proposed Program, or of Alternatives 3 or 4? If not, why not?

How do the project-level consultation requirements of the current VMPs differ from those described in the VTPEIR for the proposed Program?

4.B Why does Alternative 2, the "No Herbicide Treatment," treat 300% more acres / year with herbicides than the status quo?
The title No Herbicide Alternative is deceptive. Alternative 2 actually says that the department would not prescribe or fund vegetation treatment projects where the project applicant,
“had applied herbicides at any time up to 1 year prior to the proposed project or intended to apply herbicides within 3 years after the proposed project.”

It is not strictly a "no herbicide" Alternative. In fact, based on Table 5.0.1 of the VTPEIR, the No Herbicide Alternative will treat over 300% more acres with herbicides annually (216,910 acres) than the Status Quo Alternative 1 (65,800 acres). How does either the Program or Alternative 2 represent a reasonable alternative to the current VMP?

4.C Why aren't Alternative 3's treatments that minimize potential impacts to water quality part of the Program and every Alternative?
Since the VTPEIR makes it clear that the department and applicants have to get permits from Regional Water Quality Boards before implementing any vegetation treatment project near or possibly impacting water resources, why isn’t Alternative 3 part of the proposed Program and other Alternatives?

On p. 6-32 of the VTPEIR, Alternative 3 cites avoidance of treatments on soils-slopes with high erosion hazard (EHR). Does this mean that the other Alternatives will treat those slopes, and if so, would this not be a highly adverse impact? Wouldn't the RWQCB prohibit slope treatments on EHR anyway? If so, how is Alternative 3 a feasible alternative?

4.D Why did the Program reject the Environmentally Superior Alternative?
While the Report states that the Program is the Environmentally Superior Alternative, the document does not make the case. Alternative 3 and Alternative 4 make the case for following water quality or air quality regulations, but the document states on page 3-15 that treatment acreage goals have priority over complying with both air quality and water quality regulations, and therefore the proposed Program does not comply with either. Nowhere in the Program goals does it say that acres treated is a goal, so privileging acres treated over attaining stated goals goes against the Program.

4.E Why were the alternatives (both accepted and rejected) not evaluated in terms of how they would meet the Program's stated goals ?
CEQA guideline 15126.6. states that alternatives
"shall include those that could feasibly accomplish most of the basic objectives of the project.”

Since the VTPEIR fails to list the Program's objectives, we assume that the Program's goals are the "basic objectives of the project." How the alternatives are found to would meet or fail to meet Program goals. None of the alternatives were rejected by how they would fail to meet the Program's stated goals. On pages 3-15 and 3-16, the Report rejects both an alternative that complies with air and water quality regulations, and a proposal that concentrates efforts where fire risk is greatest. In both cases, the proposals are rejected on the grounds that too few acres would be treated, or they would be treated in the wrong place. How do the rejected alternatives fare when evaluated in how they will meet the Program's stated goals?

5. WILL MITIGATION OF THE IMPACTS CONSIDERED BE MONITORED TO DETERMINE THAT THE IMPACTS FALL BELOW THE LEVEL OF SIGNIFICANCE?

5.A How will before/after monitoring be used to assess mitigation efficacy? or to provide evidence that Program Goals are achievable?

Chapter 7, Monitoring and Implementation, discusses the concept of baseline monitoring and its importance to project mitigation. However, no specific project surveys appear to be required before or after treatment. Without valid surveys, how can there be any analysis of the kinds of impacts that might occur, or the requirement that the benefits of a treatment at least equal its damage?

Without requiring pre and post project monitoring, how will project managers determine if the Program meets the stated goals of wildlife and habitat enhancement and protection, protection of watershed values, and rangeland enhancement? And how can the VTPEIR forecast with any accuracy that vegetation treatments will be able to meet Program goals?

For example, on page 3 of the Executive Summary, Goal 7 states that the Program intends to, *"Reduce noxious weeds and non-native invasive plants to increase desirable plant species…."*

Yet on p. 8, the Executive Summary concludes that,
"Because of the need to treat invasives, the Proposed Program would have a slightly adverse to slightly beneficial impact on invasives…."

It is not clear that Goal 7 can be achieved, nor does the VTPEIR make clear how monitoring will be required to assess whether treatments are meeting their goals.

5.B How will the responsibilities of Lead, Trustee, and Responsible agencies be implemented when required on projects, and where will the funding for these staff come from?

As lead agency for proposed Program projects, CalFire will be required to consult and coordinate with Trustee and/or Responsible agencies, e.g. DFW, DPR, on vegetation treatment projects on their lands or when there is a permitting nexus. Trustee and/or Responsible agencies may be the lead agencies for any such projects. CalFire will also consult with Federal agencies if VTPEIR projects are on or near their lands.

Given the current budget and staff resource constraints throughout participating State and Federal agencies, how many CalFIRE staff are available to implement an increase in projects proposed by the Program? Have trustee / responsible agency confirmed they also have enough staff to dedicated to the review of VTPEIR projects? If current resource agency staffing levels are not sufficient to review projects, how can the Board of Forestry ensure MMRs, mitigation measures, landscape constrictions, and checklist items put in place to reduce impacts to less than significant can be implemented? Will this require new staff for these agencies? If so, where will funding for new staff come from?

II. RECOMMENDATIONS

CNPS feels the greatest failure of the Draft VTPEIR is the top-down approach upon which the Program is based. To be effective and valued at the local project level, a greater degree of local consultation must be explicitly incorporated into a Program than is described in this draft VTPEIR.

A better framework would be to gather information on optimal vegetation management for fire safety from local knowledge and experience, which would then be passed up to a regional level. Regionally generated information would then be used to develop region-specific plans that would optimize outcomes. Region-specific plans would then be combined in an overall Program that would address ONLY the issues common among the regional plans. To that end, we provide the following alternative framework recommendations.

An Alternative Program Framework
A Program framework that would be relevant to and improve the VTPEIR, is a division of analysis whereby treatment options and analyses of their effects are split into subregions. Possible subregions could be split into a Northern / Central / Southern California division, or by bioregions (e.g., VTPEIR Figure 2.1), by fire regime types, or by vegetation types.

Within each subregion, vegetation treatment prescriptions are further divided into Treatment Category Zones, which could include the WUI Lands Zone, the Urban to Agriculture Transition Lands Zone, and the Wildlands Zone.

Based on this Program framework, regional prescriptions of treatments are developed through a process that requires public consultation into Subregional Plans that:

- address the management needs appropriate to meet Program goals for each vegetation type identified in subregions,
- describe the types of notifications and permits that will be necessary for the prescribed management measures by administrative boundaries within a subregion, and
- include a revised checklist for tiered projects, as generally described in Chapter 8 of the VTPEIR, that includes an element to ensure a mandatory, local consult of project impacts among local fire and fuels management experts.

The common elements among Subregional Plans become the Program-level elements that will allow streamlining and broad administrative applicability, while providing sufficient information to allow project-level applications to tier from the Program EIR.

WUI-specific Recommendations
1. The first thirty feet
As a first step toward the goal of creating defensible space within the first thirty feet of structures, all Department of Forestry and Fire Protection structures can represent models for local residents by having the first thirty feet landscaped with locally appropriate native plants as a working demonstration of appropriate landscaping for defensible space.

These examples would provide models for local residents, would use locally appropriate native plants, and could most likely attract volunteer help from local garden clubs and California Native Plant Society Chapters.

<u>2. Retrofitting structures against ember ignitions</u>
The program should be set up to also use the publicly funded fuel clearance work to leverage homeowners into performing their own privately funded home improvement projects to harden them against ember ignitions.

Recommendations to improve the VTPEIR
We strongly urge the Board of Forestry to discontinue development of this document in its current framework. It is deeply flawed in terms of CEQA, and use of best/current environmental and fire science and planning principles. The VTPEIR fails to offer specifics to the Program and its analyses, and rationale to support basic premises.

We offer these comments and recommendations from a desire to see the CA Board of Forestry develop and approve a multifaceted, specific, statewide Program that effectively treats lands at the wildland-urban interface and recreation areas, while addressing goals for habitat types within bioregions, that addresses landowner responsibility 'from the structure outward,' and employs most current fire and biological science.

We appreciate the opportunity to provide these comments to the California Board of Forestry regarding the proposed Vegetation Treatment Program EIR. Included below are the names of Chapters whose members have contributed comments directly to this letter and/or have held special meetings to discuss and vote on expressing their support for these comments. Some have submitted letters of their own, whose comments we incorporate herein by reference. We ask again that you fully consider and respond to our comments.

On behalf of all 33 CNPS Chapters, I would like to thank you for providing an extension to the draft VTPEIR review period. I appreciate your willingness to meet with me to discuss CNPS' initial reactions to the draft, and would be glad to discuss our comments further with you or your staff.

Sincerely,

Greg Suba

Greg Suba
Conservation Program Director, CNPS
2707 K Street, Suite 1
Sacramento, CA 95816

Contributing Chapters
Alta Peak Chapter
Bristlecone Chapter
Channel Island Chapter
Dorothy King Young Chapter
East Bay Chapter
Kern County Chapter
Los Angeles/Santa Monica Mountains Chapter
Marin Chapter
Milo Baker Chapter
Monterey Bay Chapter
Mount Lassen Chapter
North Coast Chapter
Orange County Chapter
Redbud Chapter
Riverside/San Bernardino Chapter
Sacramento Valley Chapter
San Diego Chapter
San Gabriel Mountains Chapter
San Luis Obispo Chapter
Santa Clara Valley Chapter
Santa Cruz County Chapter
Sequoia Chapter
South Coast Chapter
Willis L. Jepson Chapter
Yerba Buena Chapter

State of California • Natural Resources Agency
DEPARTMENT OF PARKS AND RECREATION
P.O. Box 942896 • Sacramento, CA 94296-0001

Gavin Newsom, *Governor*
Lisa Ann L. Mangat, *Director*

March 11, 2019

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Land Use Planning Program Manager
PO Box 944246
Sacramento, CA 94244-2460
CalVTP@bof.ca.gov

Subject: Comments to the California Vegetation Treatment Program Programmatic Environmental Impact Report, 2019 update

Dear Ms. Hannigan,

The California Department of Parks and Recreation (DPR) appreciates the opportunity to provide comments on the Notice of Preparation (NOP) for the California Vegetation Treatment Program (CalVTP) Programmatic Environmental Impact Report (PEIR). As a potential responsible agency for the CalVTP, as defined by Public Resources Code (PRC) 21069, DPR has a long history of cooperatively working with Cal Fire under the current Vegetation Management Program and looks forward to continued collaboration. DPR's mission, in part, is to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources and creating opportunities for high-quality outdoor recreation. DPR manages roughly 300,000 acres of forest land across its forested park units. A well-crafted VTP will provide a valuable tool to managing these lands. In the context of our responsibility as stewards of these resources, we offer the following comments and questions for your consideration as you scope and analyze this PEIR.

Fuel Breaks

DPR has developed internal policies that prohibit the construction and maintenance of firebreaks, fuel breaks and other fuel medication zones on park lands except under specific circumstances. The inclusion of Fuel Breaks as a treatment option under the VTP has the potential to raise several issues that should be addressed during the CEQA process.

Sensitive and Listed Species: Because creating fuel breaks may impact listed and sensitive species, the PEIR should include a discussion of potential impacts and how the CalVPT will address those impacts, especially as it relates to DPR lands.

Invasive Species: Creating fuel breaks has a high potential of increasing the spread of invasive non-native vegetation. The PEIR should include a discussion of how the CalVPT will prevent the spread of invasives, particularly on DPR land.
Water Quality, Soil Erosion, and Sedimentation: The PEIR should address soil erosion, sedimentation and impacts on water quality from the creation of fuel breaks.

Cultural Resources
Many acres of DPR land do not have current cultural resource surveys and assessments. The PEIR should include conditions to conduct cultural resource surveys and address any mitigation required if there are potential impacts. The PEIR should also specify the appropriate project-level entity who should complete the required PRC 5024 documentation.

Recreation and Visitor Use
Large-scale vegetation treatments may impact park visitors. Please include how the PEIR address impacts to recreation and aesthetics.

CEQA Compliance
DPR is responsible for CEQA compliance for projects on DPR land. DPR respectfully requests that the level of analysis in the PEIR is sufficiently robust to support preparation of a project-level compliance through a notice of exemption (NOE) if no other project impacts are identified.

DPR is responsible for managing significant acreage in the area defined as "treatable landscape" as defined in the PEIR and has a long history of conducting prescribed fires for land management. With proposed landscape scale projects that include DPR lands, DPR requests to be included in scoping of these larger projects that include DPR lands, and expects to continue to maintain control over activities on its lands whomever initiates project level reviews. For landscape level fuel breaks that include, or are adjacent to DPR lands, the entity responsible for long-term maintenance, and associated funding, should be identified prior to approval.

DPR has a cadre of trained and knowledgeable staff who currently carry out fuel reduction treatment on DPR lands. Given this fact, DPR requests to be included in discussions, decision making, and oversight on treatment standards/specifications and treatment, including prescribed fire, relating to CalVTP projects on DPR land or part of a larger multi-ownership landscape level project.

DPR looks forward to continued and increased collaboration in the treatment of DPR lands and appreciates the opportunity to provide comments on this NOP for the CalVTP PEIR. We look forward to working with as you complete this process. If you have any questions or additional clarification on these comments, please contact Terri Gaines at terri.gaines@parks.ca.gov.

Sincerely,

Jay Chamberlin
Chief, Natural Resources Division

Department of Parks and Restoration Comment letter

Gaines, Terri@Parks <Terri.Gaines@parks.ca.gov>

Tue 3/12/2019 3:41 AM

To: CALVTP@BOF <CalVTP@bof.ca.gov>;

Cc: Chamberlin, Jay@Parks <Jay.Chamberlin@parks.ca.gov>;

1 attachments (899 KB)

CALVTP_PIER Coments-DPR-NRD3.11.2019 signed.pdf;

Warning: this message is from an external user and should be treated with caution.

Hi Edith

Attached is the Department of Parks and Recreation comment letter on the NOP for the CalVTP Programmatic Environmental Impact Report. Thanks for accommodating our need for extra time to get this to you.

We look forward to continued collaboration as you move through this process.

Please contact me if you have any questions or need additional clarification.

Thanks,
Terri

Terri Gaines
Environmental Program Manager
Natural Resources Division
California State Parks
916.708.6859

Please excuse unintended autocorrect errors

GAVIN NEWSOM
GOVERNOR

MARK S. GHILARDUCCI
DIRECTOR

Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

February 14, 2019

Ms. Edith Hannigan
Land Use Planning Coordinator
California Board of Forestry and Fire Protection
Post Office Box 944246
Sacramento, CA 95650

Subject: Notice of Preparation of Program Environmental Impact Report for California Vegetation Treatment Program

Dear Ms. Hannigan:

Thank you for the opportunity to review and comment on the California Board of Forestry and Fire Protection's (BOF) California Environmental Quality Act (CEQA) Notice of Preparation (NOP) for the California Vegetation Treatment Program (CalVTP) Program Environmental Impact Report (PEIR). CalVTP is a tool to increase the pace and scale of fire fuel treatments statewide as mandated in Governor Brown's Executive Order (EO) B-52-18.

The California Governor's Office of Emergency Services (Cal OES) provides community support for disaster response and recovery, therefore, these comments reflect the importance of describing the benefits of fire fuel reduction practices such as BOF proposes. Since CalVTP's purpose is to improve protection from wildfire through strategically located fuel breaks and mimic a natural fire regime using prescribed burning, Cal OES recommends its positive be described in the PEIR due to the passage of AB 2782 (Friedman) – Chapter 193, Statutes of 2018. Until passage of the statutes, as Public Resources Code Section 21082.4, positive project impacts were regularly omitted from consideration in the CEQA process. The statute states:

"In describing and evaluating a project in an environmental review document prepared pursuant to this division, the lead agency may consider specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project and the negative impacts of denying the project. Any benefits or negative impacts considered pursuant to this section shall be based on substantial evidence in light of the whole record."

Also, although relatively new, the 2019 CEQA Environmental Checklist Form includes Wildfire and Energy topics to be evaluated as "Environmental Factors Potentially Affected" in view of California's recent wildfire disasters. Further, I recommend utilizing the updated Checklist Form to address the Wildfire environmental considerations for the PEIR.

State planning law includes a requirement for consultations with state agencies with regard to information related to hazards. Upon request, Cal OES will share all available information relevant to CalVTP.

If you have any questions about these comments, please contact me at (916) 823-1945 or patricia.nelson@caloes.ca.gov.

Sincerely,

Patricia Nelson

PATRICIA NELSON
Environmental Officer

cc: State Clearinghouse

DEPARTMENT OF TRANSPORTATION
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Making Conservation a California Way of Life.

March 1, 2019

SCH # 2019012052
GTS # 74-ALL-2019-00084
GTS I.D. 14351

Ms. Edith Hannigan
Forestry and Fire Protection, Board of
916-653-8007
P.O. Box 944246
Sacramento, CA 95650

Notice of Preparation of a Program Environmental Impact Report for the California Vegetation Treatment Program

Dear Ms. Edith Hannigan:

Thank you for providing Caltrans the opportunity to review and comment on the Notice of Preparation of a Program Environmental Impact Report (PEIR) for the California Vegetation Treatment Program (CalVTP) proposed by the California Board of Forestry and Fire Protection. Under the CalVTP, the California Department of Forestry and Fire Protection (CAL FIRE) would implement vegetation treatments to reduce wildfire risks and avoid or diminish the harmful effects of wildfire on the people, property, and natural resources in the State.

Caltrans employs a wide range of professionals across the State, some of whom recently or currently assist in reducing the threat of wildfire, managing fire fuel and protecting the State's natural resources. And for this reason, we offer the following comments:

General Comments

- Please include the State Highway System (SHS) Right-of-Way (R/W) for the scope of the CalVTP PEIR.

- Caltrans requests that Cal Fire engage with Caltrans Headquarters (HQ) Division of Maintenance - Forest Management Program, HQ Division of Environmental Analysis, and HQ Division of Traffic Operations - Encroachment Permits to outline fuels treatment project priorities, environmental compliance, and the maintenance cycle to maintain the defensible space within the state highway R/W, which will require encroachment permits. Please include technical practices and procedures that will need to be further defined by District Maintenance, Environmental and Design staff that addresses project/program scope regarding vegetation treatments.

- Caltrans appreciates ongoing engagement and participation in vegetation management planning and operations to aid in the Board of Forestry and Fire Protection's efforts.

- Caltrans has traffic safety concerns related to smoke from prescribed burns limiting visibility on the SHS. Please consider sight distance and logistics staging of workers, equipment, and activities.

- Caltrans performs fire hazard control activities to roadside grasses to reduce fire risk. Additional fuels treatment is needed to address all levels of fire fuels (i.e., thinning of shrubs and trees), which includes embankment protection and potential ditch debris removal. Caltrans' collaboration with Cal Fire to identify and partner on projects within very high severity fire risk zones along highways is a desired effort in creating clear recovery zone areas and SHS defensible space in the event of natural occurring events.

Transportation Management Plan

A Transportation Management Plan (TMP) should be prepared with Caltrans input to outline the process of minimizing project related traffic impacts and delays associated with the prescribed burns and vegetation control adjacent to proposed SHS areas throughout the State. This plan would provide a framework for the implementation of traffic control strategies and timely distribution of traffic related information to emergency services and the local citizens and businesses throughout the life of the PEIR.

The TMP is an approach for alleviating or minimizing work-related traffic delays by the effective application of traditional traffic handling practices that may include innovative combination of various strategies. These strategies include public awareness campaigns, motorist information, incident management, construction methods, demand management, and alternate route planning. Depending on the complexity of the work or magnitude of anticipated traffic impacts, a TMP may provide lane requirement charts, Standard Special Provisions (SSPs) for maintaining traffic. The schedule and staging of logistics for workers, equipment, and activities are a requirement to properly communicate, plan, and execute coordination and implementation efforts for these activities in work zone areas.

Caltrans Transportation Management Plan Guidelines:
http://www.dot.ca.gov/trafficops/tm/tmp.html

Encroachment Permit

- Any work to occur in Caltrans' R/W, including temporary shoulder or lane closures, requires a Caltrans encroachment permit. Any temporary constructed access will be required to be removed upon completion. Also, installation of permanent signs, as department policy, are not permitted within Caltrans' R/W.

- We request that Cal Fire engage with Caltrans District Traffic Operations and Permits staff for interaction regarding any encroachment permit, impacts to the SHS and its travelers, traffic control measures or other mitigation measures, and other requirements such as tree trimming and removal procedures. [Appendix K (2018 update) http://www.dot.ca.gov/trafficops/ep/docs/Appendix_K_(WEB).pdf of the Caltrans Encroachment Permit Manual at http://www.dot.ca.gov/trafficops/ep/manual.html has specific provisions for tree trimming and tree removal in Caltrans R/W].

- Any work performed within Caltrans' R/W will require discretionary review and approval by Caltrans and an encroachment permit will be required for any work within the Caltrans' R/W prior to construction. As part of the encroachment permit process, the applicant must provide an approved final environmental document including the California Environmental Quality Act (CEQA) determination addressing any environmental impacts within the Caltrans' R/W, and any corresponding studies.

Hydrology and Drainage

- Please provide hydraulics studies, drainage and grading plans to Caltrans for review, if applicable.

- Please consider soil displacement as prescribed burns are undertaken, including erosion, increased turbidity in waterways, and general soil stability.

- Please address recent burn areas where potential debris flows near and adjacent to the SHS, especially upslope.

Scenic Highway

- Cal Fire will interact with Caltrans District Landscape Architect staff regarding tree removal or trimming within a State Scenic Highway corridor.

Resources

- For all vegetative removal areas, please consider cultural resources and Native American areas of special concern.

- As an agency with fee title and easement holdings over a considerable extent of land, Caltrans is responsible for compliance with Public Resources Code (PRC) 5024 (which is intended to require that State Owned Historic Resources are protected and managed). Impacts to State Owned Historic Resources through the CalVTP within Caltrans' R/W may require assessment and mitigation. The Cal VTP should be implemented in such a manner as to avoid impacts to State Owned Historic Resources.

- The PEIR should address conflicts between CalVTP objectives and existing laws and policies, such as emergency response protocols where Habitat Conservation Plans have been established, locations that are otherwise subject to State Senate Resolution 1334 for the Preservation of Oak Woodland Habitats, where the Migratory Bird Act may be invoked, and how Species of Special Concern, endangered and threatened species may be affected.

- Caltrans has adopted Best Management Practices to prevent the spread of pathogens, such as Sudden Oak Death, Port Orford Cedar Root Disease and chytrid fungus, which has shown to have negative impacts amphibian populations. We employ measures to limit the risk of noise impacts (i.e., acoustic trauma) within critical habitat areas and during certain time periods. We have observed construction practices that minimize erosion and sedimentation upstream of cross-highway culverts to ensure drainage systems are not compromised and salmon-bearing streams remain biologically productive.

- Caltrans currently maintains vegetation within Caltrans' R/W and we have concerns about changes in the roadside environment that may substitute a less fire-resistant plant species through changes in maintenance activities. Vegetation management treatments such as fire fuel thinning, back burns, control burns or grazing may result in either listed species eradication or proliferation. Caltrans is concerned with increasing grazing opportunities adjacent to the roadway which could result in more vehicle collisions with wildlife.

We may provide additional input that have technical value and may contribute towards a more thorough PEIR, please continue to keep us informed of this project and future developments that could potentially impact State transportation facilities. Should you have any questions regarding this letter, please contact Bo Wu at (916)-651-8197 or bo.wu@dot.ca.gov.

Sincerely,

Bo Wu

for CHRISTIAN BUSHONG
Branch Chief, Local Development-Intergovernmental Review
Headquarters

c: Coco Briseno, Caltrans Deputy Director of Planning and Modal Programs
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March 8, 2019

TO: California Board of Forestry and Fire Protection
Attention: Edith Hannigan
Land Use Planning Policy Manager
P.O. Box 944246
Sacramento, CA 94244-2460

FROM: California Coastal Commission
Daniel Nathan, Statewide Planning Unit

SUBJECT: Notice of Preparation of a Program Environmental Impact Report for the Proposed California Vegetation Treatment Program

Dear Ms. Hannigan,

Coastal Commission staff supports the Board of Forestry and Fire Protection's (BOF) efforts in preparing a draft Programmatic Environmental Impact Report (PEIR) on the BOF's proposed Vegetation Treatment Program (VTP) for California. We have reviewed the January 30, 2019 *Notice of Preparation of a Program Environmental Impact Report for the California Vegetation Treatment Program* (NOP), and would like to provide some general comments on the NOP in order to aid the BOF's efforts in adequately scoping key coastal resource issues for consideration in its preparation of a draft PEIR in support of the VTP. The Coastal Commission will provide additional and more specific comments after the release of the VTP draft PEIR. We appreciate the opportunity to collaborate with the BOF in developing a VTP that harmonizes protection of existing and new development from potential fire hazard with protection of the State's unique and treasured natural resources.

The California Coastal Commission (hereafter, the Commission) plans for and regulates the use of land and water in the State coastal zone, which varies in width but extends 5 miles inland in areas and includes a 3-nautical-mile-wide band of ocean extending seaward from the shoreline (Public Resources Code, § 30103(a)). Under the California Coastal Act (Public Resources Code § 30000 et seq.), the Commission is charged with upholding core coastal resource protection policies, including ensuring the provisions of maximum public recreational access, protecting water quality and sensitive coastal resources such as rare species and habitats, protecting visual resources, including public views to and along the coast and scenic coastal areas, and providing for priority uses in the coastal zone, including coastal-dependent development, coastal agriculture, and visitor-serving land uses. In partnership with coastal cities and counties, Coastal Act policies are implemented at the local level primarily through the preparation of Local Coastal Programs (LCPs), which include a land use plan and an implementation plan – the zoning ordinances, zoning district maps, and other legal instruments necessary to implement the land use plan (Public Resources Code, § 30108.5). LCPs are certified by the Commission using the Coastal Act as the standard of review. In any case, development within the coastal zone may not commence until a coastal development permit (CDP) has been issued by either the Commission or by a local government that has a Commission-certified LCP. After certification of an LCP, CDP authority in that area is delegated to the appropriate local government, but the Commission retains CDP jurisdiction over certain specified lands (Public Resources Code, § 30519(b)), as well as appellate authority over certain local government CDP decisions (Public Resources Code, § 30603).

Development activities in the coastal zone are broadly defined by the Coastal Act to include, in part, the placement or erection of any solid material or structure; the construction, reconstruction, demolition, or alteration of the size of any structure; land divisions, including lot line adjustments; activities that change the intensity of use of land, water, or public access to coastal waters; grading, dredging, and the extraction of any materials; and the removal of major vegetation (not including the harvesting of vegetation for agricultural purposes, kelp harvesting, and timber operations in accordance with a timber harvesting plan) (Public Resources Code, § 30106).

Given the Commission's planning and regulatory authority within the coastal zone, and the scope of the currently proposed VTP program area, vegetation treatment will likely occur within the coastal zone area subject to Commission and LCP jurisdictions. Therefore, vegetation treatment activities under the VTP will in many cases require CDPs that will be evaluated for consistency with certified LCPs, or where applicable, the Coastal Act. The Coastal Act and LCPs include strong protections for coastal resources, including for habitat and water quality, that are unique to the coastal zone and often go beyond other legal requirements, such as CEQA/NEPA and CESA/ESA. As such, Commission staff has identified several items below that we recommend incorporating in the BOF's draft PEIR, as follows:

1. Requirement for a Coastal Development Permit: The draft PEIR should explicitly state the requirement to obtain a CDP for development in the coastal zone, and the need for such development to be consistent with the Coastal Act and/or applicable LCP.

2. Applicable Coastal Act Policies: The draft PEIR should describe the Coastal Act's Chapter 3 policies that would apply to the subject development, including, but not limited to, Public Resources Code Sections 30230, 30231, 30233, 30236, 30240, 30251, as well as 30210 through 30224.

3. Early Coordination: The draft PEIR should recommend early coordination between the project applicant undertaking vegetation management activities within the scope of the VTP PEIR and the Coastal Commission and/or applicable local government planning departments to avoid delays in the coastal permitting process.

4. PEIR Project Objectives: The project objective is a critical part of any EIR and should be clearly described in the project description, as required by 14 CCR sec. 15124(b). As a corollary to 14 CCR sec. 15124(b), a lead agency should not adopt artificially narrow project objectives that would preclude consideration of reasonable alternatives for achieving the project's underlying purpose (See North Coast Rivers Alliance v.

Kawamura (2015) 243 Cal.App.4th 647, 669; see also County of Inyo v. City of LA (1977) 71 Cal.App.3d 185, 203). The NOP project description states that: "The upcoming PEIR will study the potential environmental effects of the proposed CalVTP's strategic treatment of wildland vegetation with the overarching goal of wildland fire risk reduction." However, the NOP also describes the overall goal of the project to be protecting life and property in California, where reducing wildland fire risk is described as one tool towards achieving that goal. The NOP adds a further layer of complexity to the project objective by including language that describes the need to prevent fires, to prevent spread of fire from wildland to urban areas, to control fires and also to reduce fire severity. In addition, the draft PEIR itself will also evaluate the use of fire in wildland areas to reduce fire risk through prescribed burns, which could be read to run counter to the other goals identified. Thus, there are a number of articulated 'project objectives' and we suggest that the objective of the project be more clearly and specifically described, including in order to allow for an appropriate analysis of alternatives to achieve the objectives (e.g., reduced vegetation treatment alternative). Based on our current understanding of the VTP, it seems the project objective could be something akin to: 'protection of life and property from fire hazards through reductions in wildland fire risks.'

5. Sensitive Species and Habitats: In order to utilize the PEIR to aid permitting in the coastal zone, it should include as much detailed information as possible about the location and characteristics of potential sensitive species and habitats that could be affected by VTP activities. For example, mapping known rare plant and animal populations and rare habitats is important for decisions regarding the use and location of fuel breaks or the use of grazers. In addition, knowledge of the life history characteristics of rare plants and animals would contribute to decision making for best timing of certain activities, decisions about what activities to employ, and locations to avoid if at all possible. Further, the draft PEIR should be careful to ensure that "within the scope" projects would be consistent with the Coastal Act and not just CEQA or other environmental laws, as certain coastal resources may fall within the category requiring site-specific biological review.

6. Include Process for Evaluating Effectiveness of Vegetation Treatment: The draft PEIR should include a process for determining the effectiveness of each vegetation treatment project, including its methods, in achieving the goal of fire risk reduction, especially where such project would cause unavoidable impacts to sensitive habitat or other coastal resources. The draft PEIR should also examine whether the use of methods with significant impacts to coastal resources are effective relative to other methods which have fewer impacts, particularly in relation to any recent scientific information. For example, a recent study indicates that fuel breaks can diminish the effectiveness of defensible spaces by providing clear paths for firebrands to come into contact with homes (see Koo et al., 2012). Where vegetation treatment projects are proposed to be ongoing, monitoring and adaptive management practices should be considered to increase fire reduction risk effectiveness and reduce impacts to sensitive habitat or other coastal resources. In addition, a section on fire history, including background information on frequency and footprints of wildfires throughout the State in sensitive habitats (e.g., ecoregions), may

aid in evaluating how effective a VTP activity may be, as various habitats have adapted differently to wildfires over time.

7. Ecological Restoration Projects: The NOP describes ecological restoration projects as generally occurring outside the Wildland-Urban Interface (WUI) in areas that have departed from the natural fire regime as a result of fire exclusion. However, the Commission has considered certain vegetation management activities, such as the removal of non-native vegetation and dead and diseased vegetation as a form of ecological restoration, given that their removal could result in the reestablishment of native, and in some cases, fire-resistant habitat. Accordingly, ecological restoration should be examined more carefully as a potential treatment option within the WUI as well. In addition, ecological restoration activities may benefit certain habitat types while causing impacts in others. The draft PEIR should evaluate which restoration activities might be beneficial in each habitat type that is included within the potential treatable areas, and it should describe what the potential benefits are.

8. Reduced Project Alternatives: The draft PEIR should evaluate alternatives that reduce the treatable land area and/or actual treated land in the coastal zone, especially within sensitive habitats. Alternatives should be designed to maximize protection of life and property while reducing impacts to coastal resources. One such alternative should look more precisely at identifying the area likely to be treated so that the treatable land area can be reduced and impacts can be more predictably evaluated. Another alternative should evaluate ways in which the actual treated area could be reduced. Such an alternative should consider other means of achieving fire safety beyond treating landscapes. Indeed, some scientific studies indicate that fuel load reduction is less important than house hardening given that the location of housing, including housing density, proximity to contiguous fuels, and location relative to predominant wind patterns, is paramount to its vulnerability to wildfires (see, for example, Cohen and Stratton 2008 and Syphard et al., 2012). Thus, we recommend that the proposed project as well as other potential alternatives, including the reduced treatable area alternative, also be evaluated for their effectiveness at reaching project objectives through such alternate means, including in light of such recent scientific findings.

9. Evaluate Coastal Resource Impacts: The NOP states that the PEIR will examine the probable environmental effects of topic areas identified in Appendix G of the State CEQA guidelines. While most coastal resources impacts may be covered within the Appendix G topic areas, we note that the VTP has the potential to impact a variety of coastal resources, including, but not limited to: environmentally sensitive habitat areas, including through the clearance and burning of vegetation and/or the application of herbicides and herbivory; biological resources, such as coastal wetlands and riparian habitat, including through runoff of herbicides and eroded sediment; coastal public access and recreation, including through the temporary loss of trails and forested areas used for recreation; visual resources, including through the alteration of natural landforms and the moonscaping of landscapes; and cultural resources. These coastal resources should be explicitly evaluated on their own, regardless of where they fall within the Appendix G topic areas, in the PEIR.

10. Individual Project Implementation: Given the programmatic nature of the VTP, it would be helpful for the draft PEIR to include a rubric that outlines the criteria for which a particular approach would be appropriate, including, but not limited to: the needs/goals of the individual project (e.g., to prevent fires, prevent the spread of fire from wildland to urban areas, control fires, reduce fire severity, etc.); constraints (e.g., physical constraints, sensitivity of coastal resources, availability of equipment, etc.); expertise needed to implement vegetation treatment activities; suitable locations for each VTP activity (e.g., defensible space, wildlands, within 100 feet of a watercourse, etc.); ability of best management practices to avoid impacts to biological resources; and any necessary mitigation measures to reduce anticipated impacts.

Thank you for the opportunity to provide comments on the NOP. We look forward to receipt of the draft PEIR, and will have additional comments for you at that time. In the meantime, if you have any questions or would like to discuss these comments, please don't hesitate to contact me at (415) 904-5251.

We appreciate the Board of Forestry and Fire Protection's consideration of our comments and look forward to working together to help shape an appropriate VTP for California's coastal zone.

Sincerely,

Daniel Nathan
Coastal Program Analyst
Statewide Planning Unit
California Coastal Commission

Letter submitted via email to CalVTP@bof.ca.gov

March 1, 2019

Attn: Edith Hannigan, Land Use Planning Program Manager
California Board of Forestry and Fire Protection
PO Box 944246 Sacramento, CA 94244-2460
CalVTP@bof.ca.gov

Re: Notice of Preparation, VTP PEIR

Dear Members of the Board,

The Center for Biological Diversity ("Center") submits the following comments on the Notice of Preparation (NOP) for the Program Environmental Impact Report (PEIR) for the proposed California Vegetation Treatment Program (VTP).

The Center urges the Board to change the direction of the VTP and use this opportunity to create an effective, science-based plan that truly protects homes and lives from wildfire, while supporting forest and chaparral ecosystem health and the climate.

California's current wildfire policies that focus on "fuels reduction" are failing. They have not effectively protected homes and lives, are putting increasing pressure on state and local budgets, and are damaging to forests and the climate. Research and on-the-ground experience from recent fires show that logging/thinning forests to change fire severity does not stop fire or protect lives and homes. Most home ignitions are not caused by coming into contact with high-severity fire, but through embers carried by wind-driven fires. Logging and thinning operations have degraded forest ecosystems, result in a net loss of carbon storage, and take resources away from solutions that keep people safe. The Board must reject the fuel-centered approach described in the Notice of Preparation and embodied in past iterations of the VTP.

California fire policies should instead focus on helping communities safely co-exist with California's naturally fire-dependent ecosystems by (1) prioritizing effective fire-safety actions for homes and the defensible space directly surrounding them, and (2) placing appropriate restrictions on the building of new developments in fire-prone areas. In existing communities, research shows that the most effective steps to prevent homes from burning are incorporating fire-safe features on buildings—fire-resistant roofing, rain gutter guards, ember-proof exterior vents, and independent external sprinklers—and pruning vegetation in the 100 feet of defensible space surrounding homes. This approach—working from the home outward—represents the most effective science-based approach to protect lives and homes.

In this "from the home outward" approach, vegetation removal for reducing home ignition risk must focus closely on the area directly surrounding houses and other structures, within 100 feet of the structures, since thinning beyond 100 feet from structures provides no reduction in ignition risk. Similarly, any vegetation thinning for the purpose of reducing wildfire risk to critical infrastructure, such as roadways and power lines, should focus on the area directly adjacent to that infrastructure. Thinning to establish evacuation routes and community defensible space must focus on vegetation within and immediately adjacent to those spaces, for the purpose of maintaining access during wildfire. Beyond the areas directly adjacent to houses and communities, wildfire and forest management should prioritize the restoration of wildfire as a natural ecosystem process.

With these comments, we are attaching several key resources for the Board to review and incorporate into an effective, science-based "from the home outward" approach to California wildfire policy:

(1) A 2019 report titled "A New Direction for California Wildfire Policy—Working from the Home Outward" compiled by the Leonardo DiCaprio Foundation that synthesizes current science on wildfire, with recommendations by experts such as Dr. Jack Cohen of the U.S. Forest Service who is a pioneer in the study of preventing home ignitions during wildfires.

(2) Comments and submitted references from the Center for Biological Diversity on past versions of the VTP submitted on January 12, 2018 and May 31, 2016.

In addition, the Board should closely review the letter and attached resources submitted on February 25, 2019 by Richard Halsey on behalf of 17 non-profit organizations with expertise on wildfire issues in California, including the Center.

We are happy and available to discuss these comments and provide additional resources.

Sincerely,

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LEONARDO DICAPRIO FOUNDATION

A New Direction for California Wildfire Policy—Working from the Home Outward

February 11, 2019

Compiled by
Douglas Bevington, Forest Director, Environment Now California Program
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A New Direction for California Wildfire Policy—Working from the Home Outward

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Executive Summary

California's state policies on wildfire need to change direction. The current policies are failing. They have not effectively protected homes, while they place dramatically increasing pressures on state and local budgets. Moreover, these policies are often based on notions about the role of fire in California's ecosystems that are not supported by sound science and do not reflect the changing climate. These policies try to alter vast areas of forest in problematic ways through logging, when instead they should be focusing on helping communities safely co-exist with California's naturally fire-dependent ecosystems by prioritizing effective fire-safety actions for homes and the zone right around them. This new direction—working from the home outward—can save lives and homes, save money, and produce jobs in a strategy that is better for natural ecosystems and the climate.

The impetus for this report is the Governor's Executive Order N-05-19, which instructed CalFire to develop wildfire policy recommendations for California. To help Governor Newsom chart a new evidence-based approach to these policies, the Leonardo DiCaprio Foundation invited experts from our partner organizations to prepare concise synopses of key points that are not likely to be included or emphasized in CalFire's recommendations. Those synopses are compiled in this report. In addition, we have prepared a list of specific steps that can help California embark on a new approach to wildfire policy that prioritizes home and community safety and works from the home outward.

Top recommendations include:

- Convene a task force focused specifically on wildfire safety for homes and communities, consisting of experts on home-safety features and community planning
- Ensure that the Governor has a diverse set of advisors on wildfire and forest policy, including experts who are not primarily advocating for logging-based strategies
- Direct SB 901 funds and other resources to prioritize support for retrofitting of homes that need to be more fire-safe and other home-safety actions

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A New Direction for California Wildfire Policy—Working from the Home Outward

Introduction

by Douglas Bevington, PhD, Forest Director, California Program, Leonardo DiCaprio Foundation

The Problem:

California's state policies on wildfire need to change direction. Those policies are currently steering resources into trying to alter vast areas of forest in problematic ways, when instead they should be focusing on helping communities safely co-exist with California's fire-dependent ecosystems by prioritizing effective fire-safety actions for homes and the zone around them.

In order to solve a problem, it needs to be defined clearly. Amid the effects of climate change, California is experiencing unprecedented levels of home destruction and loss of human life during wildfires, and fire suppression spending is bigger than ever. California has a human-safety problem during fires and also an economic problem from spiraling fire suppression costs, but California does not have an unnatural excess of forest fire in terms of either amount or severity. While recent fires are described as "record" in size, those statements are based on records from after California began suppressing fire. Prior to the advent of 20th century mechanized suppression, California's forests naturally experienced much more fire than now. Our forests need fire as an ecosystem process, and they naturally burn in a mixture of low, medium, and high-severity. (For peer-reviewed studies on these points, see pp. 12-13.)

California's current fire policies focus on how to do massive forest alterations, mainly through logging, to try to alter fire severity. Those policies are trying to address the wrong problem. Our forests do not need reduced fire amount or severity to be healthy. Moreover, altering forests to try to change fire severity is largely irrelevant to keeping homes safe during fires. Most home ignitions are not caused by coming into contact with high-severity fire (Syphard et al. 2017). For example, in the 2007 Grass Valley Fire, contact with high-severity forest fire was only responsible for 3% of the burned houses. The other 97% were due to low-severity fire, wind-blown embers, and flames from other houses (https://tinyurl.com/y33bdu9s). (This pattern can be readily seen in other fires in which burned houses are often next to unburned green trees.) Policies to address impacts to communities that are based on more logging as the solution, to try to alter fire severity, are an inefficient and ineffective way to protect homes.

Instead, research shows that the most effective steps to prevent homes from burning involve incorporating fire-safe features on buildings (e.g., roof materials, vent screens) and pruning vegetation in the zone 100 feet around houses (see pp. 8-9). When properly implemented, this approach works effectively even when faced with intense wildfires amid high temperatures and high winds, such as during the La Tuna Fire, in which more than 99% of houses within the fire path remained unburned (http://www.latimes.com/opinion/op-ed/la-oe-hanson-latuna-fire-homes-20180810-story.html). And these home-safety actions can produce jobs for rural communities (http://nreconomics.com/reports/2018-04-28_EnvNow_Report.pdf).

We need a policy focus that starts from the home outward, yet currently much of the attention and resources are being redirected to logging of vast forest areas far away from homes.

Calls for large-scale forest alterations to try to change fire severity are often based on erroneous claims that do not reflect a growing body of scientific research (see pp. 12-13) showing that:

- mixed-severity fire is a natural and necessary component of California's forests
- there is less forest fire of all severities now than there naturally should be
- logging has caused a shortage in the total volume of biomass/carbon in our forests now

Current forest-altering policies promote subsidized logging and biomass extraction that:

- take resources away from the actions that most effectively keep homes safe during fires
- are costly to taxpayers
- cause damage to forest ecosystems
- contribute to global warming by releasing stored forest carbon into the atmosphere

Associated efforts to promote forest extraction by including biomass in the state's Renewable Portfolio Standard and legislation that requires forest bioenergy procurement result in:

- increased costs for utility ratepayers
- utilities forced to select biomass power sources that are more expensive than solar and that emit more carbon dioxide than coal per unit of energy generated
- resources pulled away from zero-emission energy sources such as solar
- California biomass policies that are similar to those of the Trump administration

The Causes of this Problem:

For wildfire-related matters, California's officials and agencies have been relying too heavily on the recommendations of CalFire and the US Forest Service. These agencies have spent many decades promoting logging and intensive fire suppression, an approach that has produced high costs and poor results. Scientists widely agree that fire suppression has harmed forest ecosystems. And efforts to blame forest protection for current forest fire behavior ignore research results showing that forests with the highest levels of restrictions on logging burn at lower severities compared to forests with fewer restrictions on logging (https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.1492). Yet, CalFire and the US Forest Service continue to advocate spending more on large-scale logging (using euphemisms such as "thinning" and "management") as a primary emphasis of fire policies.

The resulting policymaking processes have drawn heavily on US Forest Service-funded scientists while avoiding or misrepresenting the peer-reviewed research of independent scientists whose findings refute the justifications used to promote logging (e.g., https://tinyurl.com/y9sqmp76).

The current approach continues to pull resources away from actions directly around homes that would help communities to safely co-exist with fire-dependent ecosystems in California. And each time homes are lost, the same voices keep on calling for even more funding to be poured into the current failing strategies. It is time for a new direction guided by new voices.

The Purpose for this Report:

The immediate impetus for this report is the Governor's Executive Order N-05-19, which instructed CalFire to develop wildfire policy recommendations for California, due to be released later this month. If past is prologue, this document will be likely focused on redoubling the failed suppression and forest-alteration strategies that have dominated CalFire's approach so far. It will be built on fundamentally erroneous claims about the role of fire in California forests that exclude key scientific research on this subject (for examples, see pp. 12-13 of our report). CalFire may continue to apply what is in effect still a 20th century fire suppression strategy that is not appropriate for our 21st century climate (see pp. 10-11). There may be mention of 21st century technologies such as drones, but they will likely be applied in support of outdated suppression goals. There may even be some greater attention on prescribed fire, but if this tool is simply used in support of an outdated suppression strategy, the outcome will be problematic (see p. 13). And while CalFire may talk about the problem of climate change, its recommended policies are likely to be detrimental to the climate (see pp. 14-17). Above all, while there may be some mention of defensible space and houses, the overall outcome of CalFire's recommendations will likely be to direct funding mainly to suppression and logging, rather than redirecting resources to where they can be most effective by focusing on retrofitting homes and communities to be prepared for the inevitable wildfires in California's fire-dependent ecosystems (see pp. 8-9, 19).

To chart a new approach to wildfire policies in California, Governor Newsom will need to seek advice beyond the voices that have steered us into the current failed policies. To help address this need, the Leonardo DiCaprio Foundation invited experts from our partner organizations to prepare concise synopses of key points that are not likely to be included or emphasized in CalFire's recommendations (pp. 10-19). In addition, we are honored to include a piece by Dr. Jack Cohen, who recently retired from the US Forest Service (pp. 8-9). Dr. Cohen has been a pioneer in the study of the importance of home features and the zone right around them for preventing home ignitions during wildfires. Despite the significant implications of Dr. Cohen's research, not nearly enough has been done to incorporate these findings into current fire policies. As a recent article summarized, "Cohen thought he had come up with a way to save houses and to let fires burn naturally—he thought it was a win-win. And so in 1999, he presented a paper about his findings at a fire conference in front of people from the Forest Service and state fire agencies. These were people who were in a position to change policies. But Cohen says they were totally uninterested. Cohen's research implied that basically everything about how the Forest Service dealt with wildfires was wrong."(https://tinyurl.com/yb4rt45r) Through the research presented in this report, we hope to show that there is now an opportunity to take California's wildfire policies in a positive and effective new direction.

Solutions:

In light of these findings, we urge Governor Newsom to seek guidance beyond the CalFire recommendations before setting the course of California's wildfire policies. In particular, we recommend that he convene a task force focused specifically on wildfire safety for homes, consisting of experts on home-safety features and community planning. (The composition of this task force would therefore be different from the Forest Management Task Force). This task force should identify the most effective and cost-efficient actions to prevent home ignitions during wildfires, including potential roles for state policies and resources to support retrofitting of homes that need to be more fire-safe. By focusing resources on preparing homes and communities to safely coexist with inevitable wildfires through a new approach that works from the home outward, we can save lives and homes, save taxpayers' money, and produce jobs in a strategy that is better for California's natural ecosystems and the climate.

Recommendations

Based on the research cited in this report, we recommend that following steps can help state wildfire policies shift to a focus on safety and cost-efficiency by working from the homes outward, while avoiding subsidizing unnecessary logging:

- ➢ Convene a task force focused specifically on wildfire safety for homes and communities, consisting of experts on home-safety features and community planning. (The composition of this task force would therefore be different from the Forest Management Task Force). This task force should identify the most effective and cost-efficient actions to prevent home ignitions during wildfires, including potential roles for state policies and resources to support retrofitting of homes that need to be more fire-safe
- ➢ Ensure that the Governor has advisors on wildfire and forest policy beyond those primarily advocating for logging-based strategies, including:
  - Environmental groups that are actively challenging harmful logging projects, so as to better understand the science-based concerns with current projects
  - Scientists who are not financially dependent on the US Forest Service
  - Experts on defensible space and forest carbon
  - Fire management experts affiliated with the National Park Service
  - Experts on chaparral and non-conifer forest ecosystems where much of the recent home losses have occurred
- ➢ Take a leadership role on setting better standards for making homes fire-safe throughout California, and link eligibility for fire/forest-related state funds to the extent to which communities implement these fire-safety measures
- ➢ Direct SB 901 funds to home-safety actions rather than logging
- ➢ Remove forest biomass from the Renewable Portfolio Standard and do not mandate utility use of expensive biomass power sources
- ➢ Conduct independent review and reform of the SB 901-mandated forest carbon calculator
- ➢ Do not use California state funds to subsidize logging on national forests
- ➢ Revise CalFire's policies to better fit 21st century climate conditions, including independent review of the costs and impact from CalFire's use of large airtankers (see p. 11)
- ➢ Shift more resources from wildland fire suppression to municipal fire departments on the frontlines of keeping homes safe
- ➢ Support research and public education about the many benefits of retrofitting homes to become more fire-safe, including job-creation and reduction of loss of life and property
- ➢ Prevent unplanned human-caused wildfire ignitions, including by increasing the pace at which utilities bury their powerlines underground. This action will reduce a key fire ignition source while simultaneously avoiding other problems with aboveground powerlines.

A More Effective Approach for Preventing Wildland-Urban Fire Disasters

By Jack Cohen, PhD, Research Physical Scientist, US Forest Service, retired

Summary

Communities exposed to inevitable extreme wildfire conditions do not have to incur inevitable disastrous fire destruction. Research shows that the characteristics of a home and its immediate surroundings within 100 feet (30 meters) principally determine home ignitions. This area, called the home ignition zone (HIZ), defines wildland-urban (WU) fires as a home ignition problem and not a problem of controlling wildfires. Communities can readily reduce home ignitability within the HIZ to prevent WU fire disasters instead of increasing wildfire suppression that fails during extreme wildfire conditions. Reducing the ignition conditions within the HIZ to produce ignition resistant homes provides an effective alternative for preventing WU fire disasters without necessarily controlling extreme wildfires.

Inevitable Wildfires and Extreme Burning Conditions

Wildfire occurrence is inevitable and thus, a small percentage of wildfires will inevitably attain uncontrollable extreme wildfire conditions. For over one-hundred years U.S. fire suppression has successfully controlled 95 to 98 percent of wildfires with initial attack (Stephens and Ruth 2005). However, there is no historical evidence or current fire management trend to suggest that all wildfires can be excluded and if not excluded, controlled with an initial suppression response. Thus, we can assume the inevitability of wildfires and the occurrence of extreme wildfire conditions (Williams 2013). Most wildfires controlled at initial attack occur during moderate to high wildfire conditions. During severe conditions of drought, high winds, low relative humidity and multiple ignitions, 2 – 5 percent of the wildfires producing rapid growth with high burning intensities escape initial attack suppression.

The primary federal, state and local approach for protecting structures from wildfires and preventing community fire disasters is wildfire control using suppression added by pre-suppression fuel breaks and shrub and forest fuel treatments (Finney and Cohen 2003, Cohen 2010). However, disastrous community wildfire destruction (greater than 100 homes destroyed) has only occurred during extreme wildfire conditions when high wind speeds, low relative humidity and continuous flammable vegetation result in rapid fire growth rates and numerous spot ignitions from showers of burning embers (firebrands); that is, the conditions when wildfire control fails (Cohen 2010, Calkin et al. 2014).

Community fire destruction during wildfires will continue as long as wildfire suppression continues to be the primary residential protection approach. The inevitability of uncontrolled extreme wildfires suggests inevitable disastrous home destruction; however, research on how homes ignite during extreme wildfires indicates practical opportunities for effectively creating ignition resistant homes and thereby preventing community fire disasters without necessarily controlling wildfires (Cohen 2000; Cohen 2001; Cohen 2004; Cohen and Stratton 2008; Cohen 2010; Calkin et al. 2014; Cohen 2017). We can immediately see how homes were not ignited during a wildfire from the readily observable patterns of destruction.

Patterns of Home Destruction during Wildfires

Total home destruction surrounded by green tree canopies following the Camp Fire in Paradise, CA (Figure 1, left photo) has been reported as unusual; however, unconsumed vegetation adjacent to and surrounding total home destruction is the typical WU fire pattern associated with extreme wildfire conditions (Cohen 2000; Cohen and Stratton 2003; Cohen 2003; Cohen and Stratton 2008; Graham et al. 2012; Cohen 2017). The center photo (Figure 1) shows an example of a burning home that could have only ignited from lofted burning embers (firebrands) on the home and low intensity surface fire spreading to contact the home. The three photos (Figure 1) of home destruction with adjacent unconsumed shrub and tree vegetation indicate the following:

Figure 1.
Paradise, CA; 2018 Camp Fire

Southwest CO; 2002 Missionary Ridge Fire

S Cal; 2007 Grass Valley Fire

- ***High intensity wildfire did not continuously spread through the residential area as a wave or flood of flame.***
- ***Unconsumed shrub and tree canopies adjacent to homes did not produce high intensity flames that ignited the homes; ignitions could only be from firebrands and low intensity surface fires.***
- ***The 'big flames' of high intensity wildfires did not cause total home destruction.***

Figure 2.

Figure 3.

High intensity wildfires do not spread through residential areas such as Paradise. The continuous tree and shrub canopies required to maintain high intensity wildfire spread (crown fires) are broken by fuel gaps such as streets, driveways and home sites (Cohen 2010). Figure 2 shows how a crown fire spread to but could not continue beyond the first residential street. Although the crown fire terminated at the street, firebrands showered downwind into the residential area initiating fires resulting in several blocks of total home destruction (Cohen 2010). Extreme wildfire conditions initiate ignitions within residential areas but the residential fuels, structures and vegetation continue the residential burning resulting in total home destruction. Commonly, homes ignite and burn hours after the wildfire has ceased active burning near the community (Cohen and Stratton 2008, Cohen 2010).

Furthermore, the typical WU fire patterns indicate that conditions local to a home principally determine home ignitions with firebrands the principal source of ignitions within the residential area. The totally destroyed home in Figure 3 indicates firebrands as the only possible ignition source, potentially igniting the home directly and the flammable materials adjacent to the home. Firebrands are a given during extreme WU fire conditions; however, regardless of the distance firebrands were lofted, firebrand ignitions depend on the local conditions of the ignitable surfaces on or adjacent to a home.

An Effective Approach for Preventing WU Fire Disasters

Research (Cohen 2004) has quantified "local ignition conditions" to be an area of a home and its immediate surroundings within 100 feet (30 meters). This area is called the home ignition zone (HIZ) (Cohen 2010; NFPA 2018). The relatively small area of the HIZ principally determines home ignitions during extreme wildfires and defines WU fire destruction as a home ignition problem that can be prevented by readily addressing home ignition vulnerabilities within the HIZ without necessarily controlling wildfires. For example, an ignition resistant home does not have a flammable wood roof, flammable tree debris on the roof, in the rain gutters, on decks or on the ground within 5 feet (1.5 m) of flammable siding, no open firewood within 30 feet (9 m), or unscreened vents. Clearing the HIZ of vegetation is not necessary. As indicated by the typical patterns of WU fire destruction, shrub and tree canopies are not spreading high intensity fires through communities. The inevitability of uncontrolled extreme wildfires spreading to communities does not mean WU fire disasters are inevitable if we address the problem with the readily available approach of reducing home ignitability. Ignition resistant communities increase community fire protection effectiveness, life-safety options for residents and firefighters, and decrease wildfire suppression costs while preventing WU fire disasters without attempting to protect communities by controlling wildfires.

CalFire's 20th Century Fire Suppression Policy is Not Appropriate for a 21st Century Climate

by Timothy Ingalsbee, PhD, Executive Director, Firefighters United for Safety, Ethics, and Ecology

Up until the mid-20th century, we had a lot more fire on the land

Hundreds of fire history studies document that wildland fires burned significantly more area than burns now. Even in the 20th century up until the 1950s, several tens of millions of acres burned in the U.S. each year (NIFC).

Then we began mechanized firefighting in the 20th century

Federal agencies such as the U.S. Forest Service began fighting fires in 1905, but with minimal effectiveness due to the large expanse of undeveloped wildlands, the limited size of its workforce, and primitive technology. This changed in the post-World War II period with an influx of military surplus vehicles and equipment in fire suppression (Pyne 1982). Cutting firelines with bulldozers and airtankers dropping chemical retardants brought annual burned acreage crashing down. In California alone there was a 36% decline in area burned from the 1940s to the 1950s, the start of a trend of rapidly declining acres burned that continued until the 1980s (CalFire-A n.d.). This created a historically unprecedented shortage of fire on the landscape that is still adversely affecting fire-adapted ecosystems across the west.

But the post-war surge of suppression success accompanied a change in climate

At the same time that mechanized firefighting was pushing deeper into backcountry wildlands and containing nearly all wildfires at a small size, the climate had changed. A prolonged cool, wet period from a natural cycle of climate variability called the Pacific Decadal Oscillation (PDO) greatly aided firefighters' efforts in stopping wildfire spread (Littell et al. 2009, Peterson et al. 2011). This created an unprecedented shortage of fire on the landscape during the 1950s and 60s. During this post-war period with its anomalously and artificially low level of wildfire activity, people developed a distorted perception of wildfires as absolutely bad, along with a false sense of security that firefighters could put them all out (Murphy et al. 2018).

21st century climate change is making wildfires start easier and spread faster

At the end of the 20th century that cool, wet PDO cycle ended and was replaced with much warmer and drier conditions that are now being amplified by global warming from fossil-fuel emissions. Prolonged droughts punctuated by frequent severe fire weather conditions (high temperatures, high winds, and low relative humidity) are making vegetation ignite much easier and fires spread more rapidly. Beginning in the 1980s but accelerating after 2000, the signal of anthropogenic climate change is now registering in greatly increased wildfire activity that is leading to longer fire seasons and increased amount of acres burned.
But even this recent increase in large fires masks the fact that there still much less fire on the land than is necessary for maintenance of California's fire-adapted forest ecosystems (Sugihara et al 2006).

21st century climate is ending the efficacy of conventional firefighting

Conventional firefighting tactics of dumping retardant, cutting firelines, and lighting backfires cannot stop wind-blown flames from jumping over firelines or firebrands lofting in the sky and landing on flammable rooftops miles away from a wildfire's flaming front. Now that 21st century anthropogenic global warming is causing severe fire weather conditions to become more frequent, the efficacy of conventional suppression is further declining. Conventional firefighting strategies and tactics are unable to either prevent or suppress large wildfires that are now being driven by climatic conditions that will be with us for the far foreseeable future.

Suppression spending is soaring

In response to increasing wildfire activity, both federal and state agencies have been dramatically escalating their suppression spending over the last 30 years. For example, in 1986 CalFire spent only $15 million total on suppression, but in 2017 the agency spent a record $947 million, far exceeding its budget (CalFire 2018). In all but one year in the 21st century CalFire has spent over $100 million—and sometimes several hundreds of millions—on firefighting, a huge surge in spending from earlier decades. But CalFire's tactics remain rooted in a suppression-based approach that is proving more and more expensive and less and less effective in a 21st century climate. In fact, the last four years have seen the highest suppression spending in CalFire's existence—accompanied by huge urban fire disasters and record numbers of homes destroyed.

Expanding the fleet of airtankers would be a poor investment of taxpayer dollars

A signature example of a costly and increasingly ineffective 20th century approach to fire suppression is the emphasis on airtankers. Airtankers are one of the most expensive resources used in wildfire suppression, but several recent studies have found that airtankers are routinely deployed at times, places, and conditions where they are least useful or effective (Stonesifer et al. 2016; Stonesifer et al. 2015; Calkin et al. 2014; Thompson et al. 2012). They are particularly likely to be impaired by high winds associated with severe fire weather. CalFire regulation 8362.3.1.1 requires airtankers to be grounded when there is even moderate turbulence or windspeeds exceeding 35 mph (CalFire-B n.d.) Heavy smoke is another impediment to effective airtanker use. For example, while the Camp Fire raged through Paradise, a fleet of airtankers located literally next door in Chico was grounded by high winds and dense smoke.

Fighting fires in backcountry wildlands depletes resources needed to protect communities

Systematic attempts to exclude or suppress all fires regardless of whether or not they are near communities is costly to taxpayers and puts communities at risk from lack of suppression crews and resources actually protecting homes. For example, in 2016 a joint CalFire/USFS effort spent over $262 million on the Soberanes Fire that burned mostly in the Ventana Wilderness Area and became the most expensive wildfire suppression operation in U.S. history (Ingalsbee et al. 2018). A USFS internal investigation (USDA-FS 2017) concluded that the excessive spending reflected "systemic fire management issues" revolving around lack of fiscal accountability that have yet to be solved. These large expenditures on fire suppression in remote areas pull limited resources away from the actions that are most effective at preventing home loss during fires.

Recommendations:

➢ Wildland fires are ecologically necessary and inevitable, but losses of life and property in urban fire disasters need not be inevitable if we adopt new fire management policies and practices suitable for 21st century climate conditions. We need to move away from 20th century mechanized fire suppression strategies, tactics, and tools (e.g., large airtankers) that are inappropriate and increasingly ineffective in the current climate.

➢ Suppression resources should be redirected away from fighting fires in remote wildlands where fire is ecologically necessary and instead focused on directly protecting communities.

➢ Invest in preparing communities to live safely and sustainably in a fire-prone environment: retrofit homes to reduce home ignitability, improve emergency communications, maintain safe evacuation routes, construct community fire shelters, bury powerlines, and implement other infrastructure projects that could be part of a Green New Deal.

Common Myths about Forests and Fire

by Chad Hanson, PhD, Ecologist and Director, John Muir Project

Do We Currently Have an Unnatural Excess of Fire in our Forests? No. There is a broad consensus among fire ecologists that we currently have far less fire in western US forests than we did historically, prior to fire suppression (Hanson et al. 2015). For example, currently, we have about 200,000 acres of fire in California's forests per year on average, and 500,000 to 900,000 in the very biggest years. Historically, before fire suppression, an average year would see 1-2 million acres in California's forests (Stephens et al. 2007, Baker 2017). California's forests have always burned with a mixture of intensities, including patches of high-intensity fire. We have less fire of all intensities now, including less high-intensity fire (Stephens et al. 2007; Mallek et al. 2013; Baker et al. 2018).

Do Current Fires Burn Mostly at High-Intensity Due to Past Fire Suppression? No. Current fire is mostly low/moderate-intensity in western US forests, including the largest fires (Mallek et al. 2013, Baker et al. 2018). The most long-unburned forests experience mostly low/moderate-intensity fire (Odion and Hanson 2008; Miller et al. 2012; van Wagtendonk et al. 2012).

Do Large High-Intensity Fire Patches Destroy Wildlife Habitat or Prevent Forest Regeneration? No. Hundreds of peer-reviewed scientific studies find that patches of high-intensity fire create "snag forest habitat", which is comparable to old-growth forest in terms of native biodiversity and wildlife abundance (DellaSala and Hanson 2015). In fact, more plant, animal, and insect species in the forest are associated with this habitat type than any other (Swanson et al. 2014). Forests naturally regenerate in ecologically beneficial ways in large high-intensity fire patches (DellaSala and Hanson 2015, Hanson 2018).

Is Climate Change a Factor in Recent Large Fires? Yes. Human-caused climate change increases temperatures, which influences wildland fire. Some mistakenly assume this means we must have too much fire but, due to fire suppression, we still have a substantial fire deficit in our forests. For example, historically, snag forest habitat, from high-intensity fire and patches of snag recruitment due to drought and native bark beetles, comprised 14% to 30% of the forests in the Sierra Nevada (Show and Kotok 1925; Safford 2013; Baker 2014; Baker et al. 2018). Currently, based on federal Forest Inventory and Analysis data, it comprises less than 8% of Sierra Nevada forests.

Are Our Forests Unnaturally Dense and "Overgrown", and Do Denser Forests Necessarily Burn More Intensely? No. We currently have somewhat more small trees than we had historically in California, but we have fewer medium/large trees, and less overall biomass—and therefore less carbon (McIntyre et al. 2015). Our forests actually have a carbon deficit, due to decades of logging. Historical forests were variable in density, with both open and very dense forests (Baker et al. 2018). Recent studies by U.S. Forest Service scientists, regarding historical tree density, omitted historical data on small tree density and density of non-conifer trees. When the missing historical data were included, it was revealed that historical tree density was 7 times higher than previously reported in ponderosa pine forests, and 17 times higher than previously reported in mixed-conifer forests (Baker et al. 2018). Wildland fire is driven mostly by weather, while forest density is a "poor predictor" (Zald and Dunn 2018).

Are Recent Large Fires Unprecedented? No. Fires similar in size to the Rim fire and Rough fire, or larger, occurred prior to modern fire suppression (Bekker and Taylor 2010, Caprio 2016).

Do Occasional Cycles of Drought and Native Bark Beetles Make Forests "Unhealthy"? Actually, it's the opposite. During droughts, native bark beetles selectively kill the weakest and least climate-adapted trees, leaving the stronger and more climate-resilient trees to survive and reproduce (Six et al. 2018). In areas with many new snags from drought and native bark beetles, most bird and small mammal species increase in numbers in such areas because snags provide such excellent wildlife habitat (Stone 1995).

Do Forests with More Dead Trees Burn More Intensely? Small-scale studies are mixed within 1-2 years after trees die, i.e., the "red phase" (Bond et al. 2009, Stephens et al. 2018), but the largest analysis, spanning the entire western U.S., found no effect (Hart et al. 2015). Later, after needles and twigs fall and quickly decay into soil, and after many snags have fallen, such areas have similar or lower fire intensity (Hart et al. 2015, Meigs et al. 2016).

Does Reducing Environmental Protections, and Increasing Logging, Curb Forest Fires? No, based on the largest analysis ever conducted, this approach increases fire intensity (Bradley et al. 2016). Logging reduces the cooling shade of the forest canopy, creating hotter and drier conditions, leaves behind kindling-like "slash" debris, and spreads combustible invasive weeds like cheatgrass.

Do "Thinning" Logging Operations Stop Wildland Fires? No. "Thinning" is used as a euphemism for intensive commercial logging projects that kill and remove many of the trees in a stand, often including mature and old-growth trees. With fewer trees, winds, and fire, can spread faster through the forest. In fact, extensive research shows that commercial logging, conducted under the guise of "thinning", often makes wildland fires spread faster, and in most cases also increases fire intensity, in terms of the percentage of trees killed (Cruz et al. 2008, 2014).

Did the Rim Fire Emit Carbon Equal to Over 2 Million Cars? No. Recent unpublished reports from the Forest Service, and the California Air Resources Board regarding wildfire carbon emissions are based on a flawed model (FOFEM) that has repeatedly been shown to exaggerate carbon emissions by nearly threefold (French et al. 2011). Further, the FOFEM model falsely assumes that no post-fire regrowth occurs to pull CO2 out of the atmosphere. Field studies of large fires find usually only about 11% of forest carbon is consumed, and only 3% of the carbon in trees (Campbell et al. 2007), and vigorous post-fire forest regrowth absorbs huge amounts of CO2 from the atmosphere, resulting in an overall net decrease in atmospheric carbon within a decade after fire (Meigs et al. 2009).[1]

Would Landscape-Scale Prescribed Burning Reduce Smoke? No, it's the opposite. Prescribed fires do not stop wildland fires when they occur (Stephens et al. 2009), though they can alter fire intensity. However, any short-term reduction in potential fire intensity following prescribed fire lasts only 10-20 years, so using prescribed fires ostensibly as a means to reduce the intensity of wildland fires would require burning a given area of forest every 10-20 years (Rhodes and Baker 2008). This would represent a tenfold increase, or more, over current rates of burning (Parks et al. 2015). High-intensity fire patches produce relatively lower particulate smoke emissions (due to high efficiency of flaming combustion in higher-intensity fire patches) while low-intensity prescribed fires produce high particulate smoke emissions, due to the inefficiency of smoldering combustion. Therefore, even though high-intensity fire patches consume about three times more biomass per acre than low-intensity fire (Campbell et al. 2007), low-intensity fires produce 3-4 times more particulate smoke than high-intensity fire, for an equal tonnage of biomass consumed (Ward and Hardy 1991, Reid et al. 2005). As a result, a landscape-level program of prescribed burning would cause at least a ten-fold increase in smoke emissions relative to current fire levels.

1. For example, Campbell et al. (2007) found that the Biscuit fire of 2002 emitted an average of 19 tons of carbon per hectare, and Campbell et al. (2016) found that decay of fire-killed trees in the Biscuit fire emitted an average of about 0.75 tons of carbon per hectare per year over the first 10 years post-fire (there were lower emissions from decay in subsequent decades). Therefore, for the first 10 years post-fire, the total carbon emissions from the Biscuit fire (carbon emissions from the fire itself, plus subsequent emissions from decay) were approximately 26 tons of carbon per hectare. Meigs et al. (2009) (Table 5) report that, by only five years after fire, regrowth was pulling 3.1 tons of carbon per hectare per year out of the atmosphere. Therefore, by 10 years post-fire, this equates to approximately 31 tons of carbon pulled out of the atmosphere by regrowth—i.e., an overall net increase in carbon of 5 tons per hectare relative to pre-fire levels.

Facts about California Forests, Wildfires, and Carbon

by Dominick A. DellaSala, PhD, Chief Scientist, Geos Institute

California's forests are nature's climate solutions, readily absorbing and storing massive amounts of carbon in trees, dense foliage, and productive soils over decades to centuries (Griscom et al. 2017). Protecting the carbon stored in forests from logging is key to a climate-safe future for California. However, recent policies proposed by the state are seeking to elevate logging levels while rolling back environmental protections in response to wildfires. These policies are sometimes portrayed as ways to sequester and store more carbon in forests and wood products. However, there is a better way to address pressing climate issues in California by using the best available science in forestry-climate policies as follows.

Do Forest Fires Emit Massive Amounts of Carbon Dioxide? At the forest stand level, most studies in the Pacific Northwest indicate that individual forest fires emit small amounts of emissions (Campbell et al. 2007; Meigs et al. 2009; Mitchell 2015). At the state level, total annual emissions from wildfires are much less (generally <10%) than total annual emissions from logging even during active fire seasons (Meigs et al. 2009; Campbell et al. 2012; Law et al. 2018; Oregon Global Warming Commission 2018). Trees killed by wildfires are not combusted (aside from twigs and leaves), and they decompose slowly over decades to centuries while logging releases carbon rapidly (the concept of carbon absorption being slow-in from forest growth over time and fast-out from rapid release by logging). About half the carbon produced in wildfires remains bound to the soils for nearly a century, while the other half is stored for millennia (Singh et al. 2012). After fires, growth of surviving trees and new vegetation sequester carbon, offsetting emissions within about 5-50 years (depending on site factors; Meigs et al. 2009, Mitchell 2015).

Does Logging Store or Release Carbon? Depending on logging intensity, forest type, and forest age class, up to 62% of carbon stored within a forest is released to the atmosphere as CO_2 pollution when forests are cut down due to decomposition (or burning) of logging slash, stumps, root wads, and soil carbon losses with additional emissions during transport and manufacturing of wood products, especially over large hauling distances (Oregon Global Warming Commission 2018, Law et al. 2018). The remaining 38% is temporarily embodied in wood product pools ranging from 1 year (paper) to decades (buildings) before decomposing and emitting CO_2 in landfills (Oregon Global Warming Commission 2018). This loss is not made up for by planting trees or substitution of wood for steel in buildings (Law et al. 2018). Thus, wood product pools have a much shorter carbon retention "life span" than the carbon stored in unlogged forests (Law et al. 2018). Based on recent studies in the Pacific Northwest, carbon stocks in forests can be doubled if forests are protected from logging on federal lands, timber harvest rotations extended from 35 to 70 years on private lands, and other forestry improvements (Law et al. 2018). Avoiding emissions from deforestation and forest degradation is also recommended by the Intergovernmental Panel on Climate Change as an effective means for preventing warming in excess of 1.5°C globally. According to NASA's Earth Observatory (2017), California already is pushing temperature increases dangerously close to unsafe levels.

Does "Thinning" Reduce Emissions from Wildfires? Studies of landscape-scale logging ("thinning") to reduce the probability of crown fires show that this practice will not reduce carbon emissions under current or future climate scenarios and may in fact make matters much worse, especially if thinning residues are burned as biofuels (Meigs et al. 2009; Hudiburg et al. 2009, 2011; Campbell et al. 2012; Mitchell et al. 2012; Schulz et al. 2012; Law et al. 2013). This is because the amount of carbon removed by landscape-scale thinning and related activities to influence fire behavior is larger than that saved in a fire, and fire only occurs on a fraction of the areas thinned (Rhodes and Baker 2009, Campbell et al. 2012).

Conclusions

California's forests have always benefited ecologically from periodic mixed-severity fires that create diverse wildlife habitat, stimulate plant growth and nutrient cycling, and carbon sequestration. Overall, they are not a major source of emissions currently as most of the carbon remains on site after disturbance and new vegetation offsets losses. Much bigger emissions are produced by logging and other industrial sectors. Thus, policies that advocate for increased logging are inconsistent with California's otherwise ground-breaking climate change efforts, and the recommendations of the Intergovernmental Panel on Climate Change. Protecting forests from logging is a natural climate solution on par with global efforts to mitigate climate change impacts (Griscom et al. 2017). California has some of the most carbon dense forests on the planet and these forests should form the backbone of a comprehensive climate change strategy that includes avoiding and reducing emissions from all sectors while preparing for unavoidable consequences of rapidly advancing climate impacts.

Biomass Power is a False Solution

by Brian Nowicki, California Climate Policy Director, Center for Biological Diversity

Fire policies in California rely heavily on burning forest biomass for energy production paired with efforts to increase logging to alter forest fire behavior. Biomass power is often portrayed as being carbon neutral, but it is not. Instead, biomass facilities increase greenhouse gas emissions; undermine the transition to clean, renewable power; pose public health threats in already-disadvantaged communities; and distort policies for forest and fire management.

Biomass energy is more climate-polluting than coal.
Forest-sourced woody biomass energy generation emits about 50% more CO2 per megawatt-hour of electricity produced than coal-fired power and three times the CO2 of natural gas (Booth 2014). While the baseline emission rate for California's current electricity portfolio is about 500 lbs CO2 per MWh (CARB 2018), biomass can emit more than 3,000 lbs CO2 per MWh (Booth 2014), and smaller-scale facilities using gasification technology are similarly carbon-intensive (Ascent Environmental 2012).

Using forest biomass as a feedstock is a significant net negative impact to the climate.
In addition to smokestack emissions, an accurate accounting of the climate harms of biomass energy must include the carbon implications of the tree removals that generate the feedstock. Thinning operations tend to remove about three times as much carbon from the forest as would be avoided in wildfire emissions (Campbell et al. 2011), and the removal of live trees from the forest also results in a loss of future growth and carbon sequestration by those trees.

The climate damage of biomass can persist for decades to centuries.
Bioenergy converts stored carbon to CO2 instantaneously, while future resequestration or avoided decomposition may take years, decades, or even centuries to achieve atmospheric parity. Multiple studies have shown that it can several decades to discharge the "carbon debt" associated with bioenergy production, even where "waste" materials like timber harvest residuals are used for fuel (Manomet Center for Conservation Sciences 2010; Repo et al. 2010, McKechnie et al. 2011; Mitchell et al 2012; Schulze et al. 2012; Booth 2018). Where forests are harvested specifically for fuel, it can be decades to centuries, if ever, before the bioenergy system realizes a net carbon benefit (depending on harvest intensity, frequency, and forest characteristics) (Searchinger et al 2009; Hudiburg et al 2011; Campbell et al 2011; Mitchell et al. 2012). One study concluded that the resulting atmospheric emissions increase may even be permanent (Holtzmark 2012).

The Trump Administration and Congress have directed federal agencies to disregard the science and assume biomass is carbon neutral.
The 2018 federal omnibus appropriations bill included a provision that ignored the recommendations of federal agencies and a scientific advisory board, and simply directed agencies to issue regulations that "reflect the carbon-neutrality of forest bioenergy." Similarly, in April 2018, EPA administrator Scott Pruitt disregarded science-based rulemaking and simply directed his agency to pursue policies that promote biomass.

California state policy ignores the carbon impacts of biomass as a component of forest policy.

California's greenhouse gas cap-and-trade program does not count the emissions from biomass combustion when calculating the level of carbon pollution for which electricity companies must obtain or purchase credits for smokestack emissions. Other California law requires that electricity suppliers collectively purchase 250 MW of biomass power annually, and California's Forest Carbon Action Plan and Vegetation Treatment Plan both prioritize biomass energy as a driver for forest thinning projects that remove live trees from the forest. Each of these policies includes a de facto assumption that biomass energy is carbon neutral, without explicitly stating that finding or providing any determination of the carbon impacts of biomass.

Policies that subsidize forest biomass divert funds from zero-carbon sources like solar and wind and impede the transition to renewable energy.

Biomass energy can be five times as expensive as wind and solar, costing $199/MWh compared to $40/MWh for wind and solar (PG&E 2017). Yet California requires that electricity suppliers collectively purchase 250 MW of biomass power annually.

Biomass results in significant emissions of air pollutants, often in California's most polluted communities.

In addition to producing large amounts of CO2, biomass generation can result in significant emissions of air pollutants that harm human health, including nitrogen oxides, carbon monoxide, particulate matter, and black carbon (Booth 2014). Biomass burning also emits large amount of hazardous air pollutants, including hydrochloric acid, dioxins, benzene, formaldehyde, arsenic, chromium, cadmium, lead, and mercury. Biomass emissions can exceed those of coal-fired power plants even after application of best available control technology.

The five most polluting biomass facilities in the San Joaquin Valley are located in the top four percent most disadvantaged census tracts in the state. For example, the Rio Bravo biomass plant in Fresno—which is expected to receive trees logged after the Rim Fire near Yosemite National Park, in a project promoted by the Sierra Nevada Conservancy—is located less than a half-mile from the Malaga Community Park, Malaga Elementary School and surrounding homes, in a neighborhood with a pollution burden score of 100 (Gale 2017).

Conclusion: Forest biomass energy is an expensive and highly polluting electricity source that is a false solution for the climate and for forest management.

Forest Fire Policies are Being Misapplied to Chaparral Ecosystems

by Richard Halsey, Executive Director, California Chaparral Institute

Chaparral is California's most extensive plant community. It is found in every county in the state. Characterized by drought-hardy shrubs, a Mediterranean-type climate, and infrequent, high-intensity fire, chaparral provides the habitat richness responsible for making California one of the most biodiverse regions on earth (Halsey and Keeley 2016). The chaparral's relationship to fire is dramatically different from that of California's forests. Actions that are often proposed for addressing fire in forest ecosystems are not appropriate in chaparral ecosystems and can lead to more flammable landscapes, destruction of critical habitat, and are an ineffective approach to protecting human communities built in these areas.

High-Intensity Fire Required

The natural fire regime for chaparral is characterized by large, high-intensity crown fires with a return interval of 30 – 150 years (Keeley and Fotheringham 2001; Lombardo et al. 2009; Safford et al. 2014). Research has demonstrated that the higher the intensity of the fire, the better the chaparral is able to recover (Keeley et al. 2005). Therefore, concerns over reducing fire intensity and severity are irrelevant to chaparral ecosystems; there's no such thing as a low-intensity chaparral fire except at the edges of fire perimeters or when localized conditions (e.g. boulders, wind shifts, moisture) reduce fire intensity. By the very nature of the physical structure of shrubs, high intensity fire is an inherent part of chaparral fires.

Long Fire Return Intervals are Required, and Too Much Fire Causes Loss of Chaparral

When compared to most forests, chaparral has comparatively long intervals between fires (30 – 150 years or more). Long fire return intervals are vital for the chaparral's ecological health. It can take up to thirty years for the native shrubs to build up enough seed in the soil to provide adequate germination rates post fire.

However, increases in fire frequency due to human-caused ignitions and the effects of climate change cause chaparral stands to become more open and are often invaded by nonnative grasses. Fire-return intervals fewer than 10 years have been shown to be highly detrimental to the persistence of chaparral species (Haidinger and Keeley 1993, Jacobsen et al. 2004). As grasses increase, the flammability of the chaparral ecosystem also increases. As a consequence, a positive feedback loop is created whereby more grass encourages frequent ignitions. Such frequent fires not only eliminate the native shrubs, but they facilitate the further spread of invasive weeds and grasses due to the fact that grass fires are less intense than shrubland fires. The type conversion process can ultimately lead to the complete replacement of native chaparral with nonnative grasses (Halsey and Syphard 2015).

Prescribed Burns and Vegetation Clearing are Destructive to Chaparral and Increase Fire

When fire management policies commonly used in forests—such as prescribed fire and vegetation clearing—are misapplied to chaparral, the results are destructive to the ecosystem and can actually increase fire. Since there is too much fire in chaparral plant communities due to human-caused ignitions, adding more through prescribed burns only increases the threat to the chaparral ecosystem's continued existence and conversion to invasive grasses that bring more frequent fires. Furthermore, prescribed burns are typically conducted in the late spring when the ecosystem is the most vulnerable to damage: the plants are growing, the soil is still moist, and many animal species are breeding. Therefore, prescribed burns can cause significant damage to plant growth tissues and destroy seeds in the soil due to soil moisture turning into steam, leading to chaparral type conversion.

Similarly, large-scale vegetation clearing projects (“fuelbreaks”) also cause the loss of native chaparral and the spread of invasive grasses that leads to more frequent fires. Amid the increasing dangers to chaparral from the effects of climate change, it is imperative that land management agencies do not exacerbate the loss of chaparral through activities like prescribed burns and large-scale habitat clearance projects away from homes. Instead, fire management in chaparral should focus on reducing the unnaturally high level of fire ignitions that has accompanied human development in this ecosystem (Keeley et al. 2005b, Keeley 2006, Syphard et al. 2007).

Focus on Homes and Their Immediate Surroundings to Make Fire-Safe Communities

While fire’s role in chaparral is different from in forests, the most effective way to keep homes from igniting during wildfires is the same in chaparral areas as in forest areas—focus on fire-safety features for homes and the zone right around them, rather than large-scale vegetation alteration in wildlands.

In a comprehensive study of the 2007 Witch Creek Fire in San Diego County, researchers found, "Wind-blown embers, which can travel one mile or more, were the biggest threat to homes in the Witch Creek Wildfire. There were few, if any, reports of homes burned as a result of direct contact with flames" from wildland fuels (IBHS 2008).

In a study examining 700,000 addresses in the Santa Monica Mountains and part of San Diego County researchers mapped the structures that had burned in those areas between 2001 and 2010, a time of devastating wildfires in the region (Syphard et al. 2012). Buildings on steep slopes, in Santa Ana wind corridors and in low-density developments intermingled with wild lands were the most likely to have burned. Nearby vegetation was not a big factor in home destruction. Looking at vegetation growing within roughly half a mile of structures, the authors concluded that the exotic grasses that often sprout in areas cleared of native habitat like chaparral could be more of a fire hazard than the shrubs. "We ironically found that homes that were surrounded mostly by grass actually ended up burning more than homes with higher fuel volumes like shrubs," Syphard said.

Working only on defensible space is not sufficient. Many homes with adequate defensible space have still burned to the ground because embers have entered through attic vents, ignited flammable materials around the home (litter in the gutter, wood stacks, wood fencing), or found their way under roofing materials (Maranghides and Mell 2009). The solution is to reduce the flammability of the home as much as possible: install ember resistant vents, Class A roofing, exterior sprinklers operated by an independent system, and remove flammable materials 100 feet from around the structure.

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January 12, 2018

Submitted Via Email (VegetationTreatment@bof.ca.gov) and Fed-Ex

Board of Forestry and Fire Protection
ATTN: Edith Hannigan, Board Analyst
VTP Draft PEIR Comments
PO Box 944246
Sacramento, CA 94244-2460

Re: Vegetation Treatment Program Recirculated Revised Draft Program Environmental Impact Report

To Whom It May Concern:

The Center for Biological Diversity (the "Center") submits the following comments on the Recirculated Revised Draft Program Environmental Impact Report ("DEIR") for the State's proposed Vegetation Treatment Program ("VTP") prepared by the California Department of Forestry and Fire Protection ("Cal Fire"). The Center incorporates by reference here comments submitted by the Center for Biological Diversity on May 31, 2016. The Center also joins, and incorporates by reference here, comments submitted by Richard Halsey of the California Chaparral Institute dated January 12, 2018 and and comments submitted by Shute, Mihaly, and Weinberger dated January 11, 2018.

The Center is a non-profit organization with more than 1.6 million members and online activists and offices throughout the United States, including in Oakland, Los Angeles, and Joshua Tree, California. The Center's mission is to ensure the preservation, protection and restoration of biodiversity, native species, ecosystems, public lands and waters and public health. In furtherance of these goals, the Center's Climate Law Institute seeks to reduce U.S. greenhouse gas emissions and other air pollution to protect biological diversity, the environment, and human health and welfare. Specific objectives include securing protections for species threatened by global warming, ensuring compliance with applicable law in order to reduce greenhouse gas emissions and other air pollution, and educating and mobilizing the public on global warming.

The Recirculated Revised DEIR has not addressed or corrected the numerous deficiencies found in the March 2016 DEIR that we identified in our May 31, 2016 comment letter. As such, we find that the DEIR fails to comply with the California Environmental Quality Act ("CEQA"), Public Resources Code § 21000 et seq., and the CEQA Guidelines, title 14, California Administrative Code, § 15000 et seq. As detailed in our May 31, 2016, comment letter, the DEIR violates CEQA on numerous counts: (1) the DEIR provides an inadequate analysis of the Program's environmental impacts; (2) Standard Project Requirements are actually mitigation measures and must be treated as such; (3) the DEIR fails to provide an accurate, stable, and finite project description; (4) the DEIR does not consider a reasonable range of alternatives; (5) the DEIR's justification for the VTP is not based on substantial evidence; (6) key objectives of the VTP are not based on substantial evidence; (7) the DEIR fails to adequately disclose, analyze, assess the significance of, and propose mitigation for impacts to biological resources caused by the Program; and (8) the DEIR fails to meet CEQA's requirements with regard to the analysis of greenhouse gas ("GHG") emissions. Thus, the California State Board of Forestry and Fire Protection cannot lawfully approve the VTP based on this EIR.

These comments supplement our May 31, 2016 comment letter in submitting new scientific studies providing further evidence that the DEIR fails to provide an adequate description of the project's environmental setting and fails to provide substantial evidence to support the key objectives of the VTP, as detailed below.

I. The Key Objectives of the VTP Are Not Based On Substantial Evidence.

The DEIR states that the purpose of the VTP is "lowering the risk of damaging wildfire in the SRA by managing wildland fuels through the use of environmentally appropriate vegetation treatments." DEIR at E-3 at 2-2. The "governing goal of the Program" is to "modify wildland fire behavior to help reduce losses to life, property, and natural resources." DEIR at E-3. This governing goal is based on the "primary assumption… that vegetation treatments can affect wildland fire behavior through the manipulation of wildland fuels." DEIR at 2-5. Specifically, the DEIR asserts that fuel treatment activities can effectively reduce wildfire intensity and severity. DEIR at 1-5, Objective 4 at 2-5. However, the DEIR fails to provide substantial evidence to support these assertions for fuel reduction in California's pine and mixed conifer forests.

Recent studies highlight the limitations of fuel reduction approaches in altering fire behavior, particularly because (a) fuel treatments are largely ineffective under extreme fire weather conditions that create the largest fires and the vast majority of annual area burned, (b) there is a low probability that areas receiving fuels treatment will overlap with wildfires, and (c) fuel treatments are costly and often infeasible to implement widely. As summarized by DellaSala et al. (2017): "On public lands, current fire policy promotes thinning over large landscapes (e.g., USDA Forest Service 2002, US Congress 2003, USDA Forest Service 2009, US Congress 2015), which is costly (Schoennagel and Nelson 2011), infeasible over large areas (Calkin *et al.* 2013, North *et al.* 2015*a*, Parks *et al.* 2015), and largely ineffective under extreme fire weather conditions (Lydersen *et al.* 2014, Cary *et al.* 2016)."[1] Similarly, Zachmann et al. (2018) found: "The combination of transient treatment effects, variability in the effectiveness of different treatment methods (Kalies and Yocom Kent, 2016; Martinson and Omi, 2013; Prichard et al.,

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[1] Dellasala, D.A. et al. 2017. Accommodating mixed-severity fire to restore and maintain ecosystem integrity with a focus on the Sierra Nevada of California, USA. Fire Ecology 13: 148-171.

2010), and operational and funding constraints (North et al., 2015) limits the practicality of frequent treatments at the landscape scale; and there is growing recognition that fuels reduction alone may not be able to effectively alter regional wildfire trends (Schoennagel et al., 2017)."[2] In addition, a recent study by Bradley et al. (2016) conducted across pine and mixed conifer forests of the western US indicates that forests with the highest levels of protection from logging tend to burn least severely.[3]

Due to the limitations of fire suppression and fuel treatment approaches, many fire ecologists and managers are recommending allowing more naturally ignited fire to burn in remote regions and focusing fire suppression more narrowly to lands surrounding towns in combination with the creation of defensible space around structures. For example, DellaSala et al. (2017) made the following recommendations, consistent with other recent studies:

> [W]e concur with others that active management approaches could include more natural fire ignitions (Calkin 2013, Meyer 2015, North *et al.* 2015*b*) or resource objective wildfires (Meyer 2015) in which fire is put back on the landscape to hasten the process of forest restoration (Moritz *et al.* 2014, Moritz and Knowles 2016). This would also help to meet fire and fuels objectives and allow managers to better accommodate mixed-severity fire effects for ecosystem integrity (Meyer 2015, Dunn and Bailey 2016).
>
> [W]e concur with others (e.g., Moritz *et al.* 2014, Ingalsbee and Raja 2015, Dunn and Bailey 2016, Moritz and Knowles 2016, Schoennagel *et al.* 2017) that suppression could be focused narrowly to lands surrounding towns and used in combination with defensible space management nearest homes (Cohen 2000, 2004) so that more wildland fires can burn safely in the backcountry.[4]

Zachmann et al. (2018) recommended incorporating "prescribed natural regeneration" into forest management planning to increase forest resilience—that is, deliberately allowing natural processes to proceed unimpeded in some areas, which "is often ignored as a viable land-use option." This study found that the structure and fuel variables of mixed conifer forest stands in the Lake Tahoe basin that were treated with prescribed fire appeared to be "moving in a similar direction" as stands that were untreated and left to natural regeneration. Both treated and long-unaltered, untreated areas experienced declines in tree density, increases in the size of the average individual, and losses of surface fuels in most size classes, although the number of large

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[2] Zachmann, L.J. et al. 2018. Prescribed fire and natural recovery produce similar long-term patterns of change in forest structure in the Lake Tahoe basin, California. Forest Ecology and Management 409: 276-287.
[3] Bradley, C.M. et al. 2016. Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western United States? Ecosphere 7:e01492.
[4] Dellasala, D.A. et al. 2017. Accommodating mixed-severity fire to restore and maintain ecosystem integrity with a focus on the Sierra Nevada of California, USA. Fire Ecology 13: 148-171.

trees increased in untreated areas and decreased in treated areas. The results "suggested that untreated areas may be naturally recovering from the large disturbances associated with resource extraction and development in the late 1800s [even while exposed to a changing climate and longterm fire suppression], and that natural recovery processes, including self thinning, are taking hold." The study concluded that "incorporation of natural regeneration into forest management planning can greatly reduce the cost and resource requirements of large-scale restoration efforts (Chazdon and Guariguata, 2016; Nunes et al., 2017), while also providing habitat for fire-dependent and undisturbed old forest dependent species (Roberts et al., 2015)."

The DEIR also fails to provide substantial evidence for its governing assumption that fuel treatment activities will protect homes and structures in the WUI. DEIR at 1-5. Instead, scientific studies indicate that the most effective way to protect structures from fire is to reduce the ignitability of the structure itself (e.g., fireproof roofing, leaf gutter guards) and the immediate surroundings within about 100 feet from each home, e.g., through thinning of brush and small trees adjacent to the homes. In a California-focused study, Syphard et al. (2014) found that structures were more likely to survive a fire with defensible space immediately adjacent to them, although housing density and distances to major roads were also important in explaining structure destruction. [5] According to Syphard et al. (2014): "The most effective treatment distance varied between 5 and 20 m (16–58 ft) from the structure, but distances larger than 30 m (100 ft) did not provide additional protection, even for structures located on steep slopes. The most effective actions were reducing woody cover up to 40% immediately adjacent to structures and ensuring that vegetation does not overhang or touch the structure." As a result, efforts to promote large-scale thinning in areas far away from buildings are often wasteful, expensive, inefficient, carbon-releasing, ecologically-damaging, and relatively ineffective, compared to efforts that focus on buildings and the defensible space in their immediate vicinity (Scott et al. 2016).[6]

II. The DEIR's Justifications for the VTP Are Not Based on Substantial Evidence and Result in an Inaccurate Description of the Program's Environmental Setting.

The DEIR's justifications for the VTP are predicated on assertions that are not supported by the best available science, and lead to an inaccurate description of the Program's environmental setting, as described below.

First, a key objective of the VTP is to reduce fire severity based on the unsupported claim that fire severity is increasing in California's forests. DEIR at E-2, E-3. However, the DEIR fails

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[5] Syphard, A.D. et al. 2014. The role of defensible space for residential structure protection during wildfires. International Journal of Wildland Fire 23:1165-1175.

[6] Scott, J.H. et al. 2016. Examining alternative fuel management strategies and the relative contribution of National Forest System land to wildfire risk to adjacent homes – A pilot assessment on the Sierra National Forest, California, USA. Forest Ecology and Management 362: 29-37.

to acknowledge the large body of studies that have found no significant trends in fire severity in California's forests in terms of proportion, area, and/or patch size, including recent studies by Picotte et al. 2016 (California forest and woodland) and Keyser and Westerling 2017 (California forests).[7] Most recently, Keyser and Westerling (2017) tested trends for high severity fire occurrence for western United States forests, for each state and each month. The study found no significant trend in high severity fire occurrence during 1984-2014, except for Colorado. The study also found no significant increase in high severity fire occurrence by month during May through October, and no correlation between fraction of high severity fire and total fire size. Furthermore, Parks et al. (2016) projected that even in hotter and drier future forests, there will be a decrease or no change in high-severity fire effects in nearly every forested region of the western U.S., including California, due to reductions in combustible understory vegetation over time.[8]

Second, the DEIR suggests that there is currently an excess of high-intensity fire in California's forests that is ecologically detrimental. However, research indicates that there is currently less fire in California's pine and mixed conifer forests, including less high-severity fire, compared with historical conditions,[9] and that many species depend on the unique habitat created by mixed-intensity fires, including high-severity fire patches (Campos and Burnett 2016, Tingley et al. 2016, White et al. 2016, Campos et al. 2017, Fogg et al. 2017).[10]

Third, the DEIR asserts that California's forests are too dense, making them susceptible to more intense fire, as a justification for fuels treatments. DEIR at 2-10. However, this representation does not reflect current science. McIntyre et al. (2015) indicates that California's forests are much less dense in terms of basal area than they were historically.[11] Sierra Nevada

[7] Picotte, J.J. et al. 2016. 1984-2010 trends in fire burn severity and area for the coterminous US. International Journal of Wildland Fire 25: 413-420; Keyser, A. and A.L. Westerling. 2017. Climate drives inter-annual variability in probability of high severity fire occurrence in the western United States. Environmental Research Letters 12: 065003.
[8] Parks, S.A. et al. 2016. How will climate change affect wildland fire severity in the western US? Environmental Research Letters 11: 035002.
[9] See references in our May 31, 2016 letter.
[10] Campos, B.R. and R.D. Burnett. 2016. Bird and bat inventories in the Moonlight, Storrie and Chips fire areas: 2015 report to the Lassen and Plumas National Forest. Point Blue Conservation Science, Petaluma, CA; Tingley, M.W. et al. 2016. Pyrodiversity promotes avian diversity over the decade following forest fire. Proceedings of the Royal Society B 283: 20161703; White, A.M. et al. 2016. Avian community response to post-fire forest structure: implications for fire management in mixed conifer forests. Animal Conservation 19: 256-264; Campos, B.R. et al. 2017. Bird and bat inventories in the Storrie and Chips fire areas 2015-2016: Final report to the Lassen National Forest. Point Blue Conservation Science, Petaluma, CA; Fogg, A.M. et al. 2017. Avian Monitoring in Freds and Power fires: Final Report. Point Blue Conservation Science, Petaluma, CA.
[11] McIntyre, P.J. et al. 2015. Twentieth-century shifts in forest structure in California: denser forests, smaller trees, and increased dominance of oaks. PNAS 112: 1458-1463.

forests were estimated to be about 30% less dense, and Tranverse and Peninsular Range forests were 40% less dense, in terms of basal area in the 2000s compared to the 1930s,[12] largely due to past and present logging. Moreover, historically, California's mixed-conifer and ponderosa pine forests had a wide range of densities. For example, Hodge (1906) reported that ponderosa pine forests of the western Sierra Nevada had density ranges generally from about 100 to 1000 trees per acre, and were dominated by smaller trees.[13] A reconstruction of historical forest structure in Sierra mixed-conifer forests based on 1865-1885 survey data suggests that historical forests "were open and park-like in places, but generally dense, averaging 293 trees/ha" with smaller pines and oaks numerically dominant, as indicative of mixed- rather than low-severity fire regimes.[14] An assessment of US Forest Service forest survey data from 1910 and 1911 for central and southern Sierra Nevada ponderosa pine and mixed-conifer forests similarly indicates that historical forests had a high variability in density, again indicative of varied disturbance intensities and frequencies.[15] Moreover, as discussed in our May 31, 2016 comments, the body of empirical studies in California's forests indicates that fire-suppressed forests are not burning at higher fire severity.

Fourth, the DEIR suggests that fuels reduction treatments under the VTP will increase forest resilience, particularly under climate change. DEIR at 1-4, 1-12. However, research suggests that forest management treatments focused on thinning trees to increase resilience to climate change stressors can be counter-productive, and many studies instead recommend restoring natural disturbance processes to increase resilience. Carnwath and Nelson (2016) noted that management activities to reduce tree density with the purpose of increasing stand resilience often target trees that may be the most drought-resilient, producing counter-productive results.[16] Similarly, D'Amato et al. (2013) concluded that "heavy thinning treatments applied to younger populations, although beneficial at reducing drought vulnerability at this stage, may predispose these populations to greater long-term drought vulnerability."[17] Keeling et al. (2006) emphasized the importance of restoring ecological processes, especially wildfire, rather than management

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[12] *Id*. at Figure 1a.
[13] Hodge (1906) as cited in Hanson, C.T. and D.C. Odion. 2016. Historical forest conditions within the range of the Pacific fisher and spotted owl in the Central and Southern Sierra Nevada, California, USA. Natural Areas Journal 36: 8-19, at 17.
[14] Baker, W. L. 2014. Historical forest structure and fire in Sierran mixed-conifer forests reconstructed from General Land Office survey data. Ecosphere 5:79.
[15] Hanson, C.T. and D.C. Odion. 2016. Historical forest conditions within the range of the Pacific fisher and spotted owl in the Central and Southern Sierra Nevada, California, USA. Natural Areas Journal 36: 8-19, at 17.
[16] Carnwath, G.C. and C.R. Nelson. 2016. The effect of competition on response to drought and interannual climate variability of a dominant conifer tree of western North America. Journal of Ecology 104: 1421-1431.
[17] D'Amato, A.W. et al. 2013. Effects of thinning on drought vulnerability and climate response in north temperate forest ecosystems. Ecological Applications 23: 1735-1742.

that tries to create specific stand conditions.[18] Keeling's study in ponderosa pine/Douglas-fir communities found that "fire and absence of fire produce variable effects in the understory and different rates of successional change in the overstory across varied landscapes." The authors cautioned "against specific targets for forest structure in restoration treatments, and underscore the importance of natural variability and heterogeneity in ponderosa pine forests." Further, "management may need to emphasize restoration of natural ecological processes, especially fire, rather than specific stand conditions."

Fifth, the DEIR misrepresents the effects of forest wildfire on water flows. For example, a recent study by Boisrame (2016) found that restoring a frequent, mixed severity fire regime to the Illilouette Creek Basin in Yosemite National Park had numerous ecohydrological benefits, including increased soil moisture and streamflow, decreased drought stress, and increased landscape diversity.[19]

Sixth, the DEIR fails to acknowledge key research on the effects of bark beetles on California forests, including findings that trees killed by bark beetles and drought do not increase fire severity or extent; high-severity fire appears to reduce future susceptibility to beetle outbreaks; prior beetle outbreaks may reduce susceptibility to future outbreaks and confer climate change resilience to forests; and thinning does not appear to protect stands from future beetle outbreaks. A recent study by Meigs et al. (2016), conducted in mostly mixed-conifer and ponderosa pine forests of the Pacific Northwest (south to the California border), found the following: "In contrast to common assumptions of positive feedbacks, we find that insects generally reduce the severity of subsequent wildfires. Specific effects vary with insect type and timing, but both insects [mountain pine beetle and western spruce budworm] decrease the abundance of live vegetation susceptible to wildfire at multiple time lags. By dampening subsequent burn severity, native insects could buffer rather than exacerbate fire regime changes expected due to land use and climate change."[20] Specifically with regard to the mountain pine beetle, a native species associated with the current snag recruitment in California's ponderosa pine and mixed-conifer forests, Meigs et al. (2016) found that fire severity was the same between stands with high levels of snags from drought/beetles and unaffected forests, when fires occurred during or immediately after the pulse of snag recruitment, and then fire severity consistently declined in the stands with high snag levels in the following decades (see Figure 3a).

Studies investigating how previous fire affects subsequent bark beetle outbreaks have found that high-severity fire reduces forest susceptibility to future outbreaks (e.g., Veblen et al.

[18] Keeling, E.G. et al. 2006. Effects of fire exclusion on forest structure and composition in unlogged ponderosa pine/Douglas-fir forests. Forest Ecology and Management 327: 418-428.
[19] Boisrame, G. 2016. Wildfire Effects on the Ecohydrology of a Sierra Nevada Watershed. PhD Dissertation. University of California, Berkeley.
[20] Meigs, G.W., et al. 2016. Do insect outbreaks reduce the severity of subsequent forest fires? Environmental Research Letters 11: 045008.

1994, Kulakowski et al. 2012, Black et al. 2013, Seidl et al. 2016).[21] For example, Seidl et al. (2016) concluded that spatial variability in tree regeneration following large high-severity wildfire in Yellowstone National Park dampened and delayed future bark beetle outbreaks. The authors recommended that managers "embrace rather than reduce disturbance-created variability to strengthen negative feedbacks between successive disturbances." The study suggests that thinning/logging is likely to homogenize forests and exacerbate outbreaks: "postdisturbance salvage logging, removal of legacy trees or undisturbed forest patches, and extensive tree planting generally reduce disturbance-induced variability and thus likely weaken negative feedbacks between disturbance events."

Hart et al. (2015) conducted the first broad-scale analysis of how prior bark beetle outbreaks affect susceptibility to future outbreaks.[22] The study found that a widespread, severe spruce beetle outbreak reduced forest susceptibility to spruce beetle infestation 60 years later. Importantly, the study concluded that "failure to incorporate negative feedbacks into prediction of future bark beetle outbreaks is likely to over-predict the extent or severity of future outbreaks and by implication under-estimate forest resistance to altered disturbance regimes under climate change." Three studies also suggest that bark beetles may act as a selective agent that increases forest resilience to climate change by shifting forest stands to those most suited to the prevailing climate conditions (Millar et al. 2007, Millar et al. 2012, Knapp et al. 2013).[23]

Reviews by Black et al. (2013) and Six et al. (2014) found that thinning treatments have mixed results and can fail to protect stands.[24] For example, Black et al. (2013) concluded that "[i]nsect containment measures have yielded mixed results and may pose significant risks to

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[21] Veblen, T.T. et al. 1994. Disturbance regime and disturbance interactions in a Rocky Mountain subalpine forest. Journal of Ecology 82: 125–35; Kulakowski, D. et al. 2012. Stand-replacing fires reduce susceptibility of lodgepole pine to mountain pine beetle outbreaks in Colorado. Journal of Biogeography 39: 2052–60; Black, S.H. et al. 2013. Do bark beetle outbreaks increase wildfire risks in the Central U.S. Rocky Mountains: Implications from Recent Research. Natural Areas Journal 33: 59-65; Seidl, R. et al. 2016. Spatial variability in tree regeneration after wildfire delays and dampens future bark beetle outbreaks. PNAS 113: 13075-13080.

[22] Hart, S.J. et al. 2015. Negative feedbacks on bark beetle outbreaks: widespread and severe spruce beetle infestation restricts subsequent infestation. PLoS ONE 10(5): e0127975.

[23] Millar, C.I. et al. 2007. Response of high-elevation limber pine (*Pinus flexilis*) to multiyear droughts and 20th-century warming, Sierra Nevada, California, USA. Canadian Journal of Forest Research 37: 2508-2520; Millar, C.I. et al. 2012. Forest mortality in high-elevation whitebark pine (*Pinus albicaulis*) forests of eastern California, USA; influence of environmental context, bark beetles, climatic water deficit, and warming. Canadian Journal of Forest Research 41: 749-765; Knapp, P.A. et al. 2013. Mountain pine beetle selectivity in old-growth ponderosa pine forests, Montana, USA. Ecology and Evolution 3: 1141-1148.

[24] Black, S.H. et al. 2013. Do bark beetle outbreaks increase wildfire risks in the Central U.S. Rocky Mountains: Implications from Recent Research. Natural Areas Journal 33: 59-65; Six, D.L. et al. 2014. Management for mountain pine beetle outbreak suppression: does relevant science support current policy? Forests 5: 103-133.

forested ecosystems." Six et al. (2014) noted that "many studies assessing the efficacy of thinning have been conducted under non-outbreak conditions" and therefore their results do not reflect how stands perform during an outbreak. Furthermore, "failures are often not reported" and "studies conducted during outbreaks indicate that thinning can fail to protect stands." Importantly, Six et al. (2014) cautioned that the pressure to thin forests as beetle treatments, often as a means to provide revenue to the commercial timber industry, without scientific understanding of treatment effects can lead to "more harm than good":

> That pressure, to "do something", might also interact with the uncertainty about which choices are effective and appropriate (as with beetle timber harvest treatments) to create an opportunity for political pressures to force the adoption of particular choices that benefit specific interest groups [143]. It is perhaps no accident that the beetle treatments that have been most aggressively pushed for in the political landscape allow for logging activities that might provide revenue and jobs for the commercial timber industry. The result is that the push to "do something," uncertainty, and political pressures might lead us to act to respond to climate change before we understand the consequences of what we are doing, in the end producing more harm than good.

Conclusion

In sum, the DEIR fails to comply with CEQA and the CEQA Guidelines. Cal Fire cannot approve the VTP on the basis of this DEIR. Rather, Cal Fire must revise both the DEIR and the VTP to comply with the requirements of law and to reflect the physical and ecological realities of California's forests. Please feel free to contact us if you have any questions about these comments.

Sincerely,

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Attachments: References Cited (uploaded in PDF format on compact disk)

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May 31, 2016

Via Internet Upload (VegetationTreatment@bof.ca.gov)

Board of Forestry and Fire Protection
ATTN: Edith Hannigan, Board Analyst
VTP Draft PEIR Comments
PO Box 944246
Sacramento, CA 94244-2460

Re: Vegetation Treatment Program (VTP) Draft Environmental Impact Report

To Whom It May Concern:

The Center for Biological Diversity (the "Center") submits the following comments on the Draft Program Environmental Impact Report ("DEIR") for the State's proposed Vegetation Treatment Program ("VTP" or "Program") prepared by the California Department of Forestry and Fire Protection ("Cal Fire"). The Center also joins, and incorporates by reference here, comments submitted on 27 May 2016 by Richard Halsey of the California Chaparral Institute and nine additional organizations, comments submitted on 24 May 2016 by The California Chaparral Institute, and comments submitted on 27 May 2016 by Shute, Mihaly, and Weinberger.

The Center is a non-profit organization with more than one million members and online activists and offices throughout the United States, including in Oakland, Los Angeles, and Joshua Tree, California. The Center's mission is to ensure the preservation, protection and restoration of biodiversity, native species, ecosystems, public lands and waters and public health. In furtherance of these goals, the Center's Climate Law Institute seeks to reduce U.S. greenhouse gas emissions and other air pollution to protect biological diversity, the environment, and human health and welfare. Specific objectives include securing protections for species threatened by global warming, ensuring compliance with applicable law in order to reduce greenhouse gas emissions and other air pollution, and educating and mobilizing the public on global warming and air quality issues.

Based on our review, we find that the DEIR fails to comply with the California Environmental Quality Act ("CEQA"), Public Resources Code § 21000 et seq., and the CEQA Guidelines, title 14, California Administrative Code, § 15000 et seq. The DEIR violates CEQA on numerous counts, including the following key deficiencies discussed further below: (1) the DEIR provides an inadequate analysis of the Program's environmental impacts; (2) Standard Project Requirements are actually mitigation measures and must be treated as such; (3) the DEIR fails to provide an accurate, stable, and finite project description; (4) the DEIR does not consider a reasonable range of alternatives; (5) the DEIR's justification for the VTP is not based on substantial evidence; (6) key objectives of the VTP are not based on substantial evidence; (7) the DEIR fails to adequately disclose, analyze, assess the significance of, and propose mitigation for impacts to biological resources caused by the Program; (8) the DEIR fails to meet CEQA's requirements with regard to the analysis of greenhouse gas ("GHG") emissions.

While these comments focus on the deficiencies in the DEIR's analysis of impacts on biological resources and greenhouse gas emissions, significant and unlawful deficiencies pervade the remaining environmental impacts analyses as well. In short, the proposed VTP will result in a wide range of harmful environmental impacts that are not adequately disclosed, analyzed, or mitigated in the DEIR. The California State Board of Forestry and Fire Protection cannot lawfully approve the VTP based on this EIR.

I. The DEIR Provides an Inadequate Analysis of the Program's Environmental Impacts

The DEIR provides an impermissibly vague and cursory analysis of the VTP's environmental impacts, which is a fatal flaw that permeates the entire document. The DEIR attempts to justify the lack of detailed analysis by labeling itself a programmatic EIR and suggesting that there will be a future opportunity for environmental review when each project is implemented. DEIR at E-5. CEQA, however, does not allow an agency to defer analysis simply by labeling its EIR a "program EIR." CEQA recognizes that a program EIR "can provide an occasion for a *more exhaustive* consideration of effects and alternatives" than a project-specific EIR. Guidelines § 15168(b)(1) (emphasis added). In addition, program EIRs must "deal[] with the effects of the program as specifically and comprehensively as possible" and consider "cumulative impacts that might be slighted in a case-by-case analysis." *Id*. § 15168(b)(2), (c)(5). As the Court summarized in *Friends of Mammoth v. Town of Mammoth Lakes Redevelopment Agency*, 82 Cal.App.4th 511, 533 (2000)("[d]esignating an EIR as a program EIR also does not by itself decrease the level of analysis otherwise required in the EIR." The California Supreme Court also recently cautioned, "'[t]iering does not excuse the lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis to a later tier EIR or negative declaration."); *Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova*, 40 Cal.4th 412, 431 (2007)(quoting Guidelines § 15152(b)).

Here, the DEIR fails as an informational document because it does not provide decision-makers and the public with adequate information about the impacts of the overall program. Moreover, the vague, cursory, deferred analysis in the program DEIR is not sufficient to support any later project-level decision-making. There is no process in the program DEIR that guarantees that a future, detailed environmental review will occur, or that environmental impacts will be disclosed, analyzed, and mitigated.

II. Standard Project Requirements are Actually Mitigation Measures and Must Be Treated as Such

Throughout the DEIR, Cal Fire presents Standard Project Requirements (SPRs) that "are program design elements for reducing or avoiding adverse environmental effects of the treatment activities that are set by the VTP and applied to individual projects." DEIR at 2-51-52. The DEIR broadly presumes these SPRs will mitigate any potentially significant impacts from the project. *See, e.g.,* DEIR at 3-8, 4-118, 4-429, 430. But this approach runs afoul of CEQA's requirement that impacts first be fully disclosed and analyzed separately from the mitigation analysis. As the court noted in *Lotus v. Dep't of Transportation*, separation of significance and mitigation/alternatives analysis ensures that appropriate mitigation measures have been considered and that decision makers and the public can "intelligently analyze the logic of the [agency's] decision." *Lotus v. Dept. of Transportation*, 223 Cal. App. 4th 645, 655-656 (2014). In *Lotus*, the EIR for a highway through an old-growth redwood stand assumed that because certain mitigation measures to minimize damage were proposed as part of the project, the impact was non-significant. The court, however, held that the EIR was deficient because it failed to first identify the significant impacts and then appropriate alternatives and mitigation measures, consequently "subvert[ing] the purposes of CEQA by omitting material necessary to informed decisionmaking and informed public participation." *Id*. at 658. Similarly, the VTP DEIR impermissibly conflates the impacts analysis and mitigation analysis to the extent that it assumes SPRs will reduce impacts to the level of non-significance.[1]

The fallacy of relying on SPRs rather than quantified mitigation measures is particularly apparent with regard to greenhouse gases. Some of the SPRs that the DEIR claims will reduce GHG emissions do not appear to do so. For instance, SPR CC-1 states that the project coordinator will run GHG emission models to "confirm" that GHG emissions are minimized. DEIR at 4-432. Yet, there is zero indication what it means to "confirm" minimal emissions, and what changes would be implemented to reduce greenhouse gases. This SPR is not only ineffective on its face but also constitutes impermissible deferred mitigation. *See* CEQA Guidelines § 15126.4(a)(1)(B). The DEIR also indicates that implementation of mitigation measure AIR-3 would reduce greenhouse gas emissions (DEIR at 4-432) but, as noted below, the air quality mitigation measures are aimed at reducing criteria pollutants such as particulate matter that vary inversely with CO_2 emissions. Had the effectiveness of these and other SPRs been subjected to the detailed analysis required for mitigation measures under CEQA, the shortcomings in assumed GHG reductions would have become evident. Furthermore, without sufficient information on the effectiveness of each mitigation measure, the DEIR fails as an

[1] The fact that some of the SPRs may also be regulatory requirements does not excuse the DEIR's lack of analysis. Compliance with a regulatory requirement does not automatically reduce environmental impacts to a less-than-significant level. *See, e.g.*, *Californians for Alternatives to Toxics v. Department of Food & Agriculture*, 136 Cal. App. 4th 1, 16-17 (2005).

informational document under CEQA. *See, e.g., Sierra Club v. County of San Diego*, 231 Cal. App. 4th 1152 (2014).

Moreover, CEQA's requirements for mitigation measures are intended to ensure those measures are enforceable and are actually implemented. CEQA prohibits public agencies from approving projects with significant environmental impacts unless all feasible mitigation measures to minimize those impacts are adopted. *See* Pub. Res. Code §§ 21002, 21002.2(b), 21081. In doing so, the lead agency must "ensure that feasible mitigation measures will actually be implemented as a condition of development, and not merely adopted and then neglected or disregarded." *Federation of Hillside and Canyon Assns. v. City of Los Angeles*, 83 Cal.App.4th 1252, 1261 (2000) (italics omitted). Mitigation measures must be "fully enforceable," either through conditions of approval or through incorporation into a project itself. CEQA Guidelines § 15126.4(b). Where feasible mitigation measures exist, a public agency cannot approve a project without specifically finding that legally adequate measures have been incorporated into the project. *See* Pub. Res. Code § 21081(a)(1). An agency also must adopt a mitigation monitoring and reporting plan to ensure that measures are actually implemented following project approval. Pub. Res. Code § 21081.6(a)(1); CEQA Guidelines § 15097. If mitigation is infeasible, the agency must make a specific finding to this effect, and must adopt a statement of overriding considerations before it can approve the project. Pub. Res. Code § 21081(a)(3), (b); CEQA Guidelines §§ 15091(a)(3), 15093. Here, the DEIR improperly substitutes unenforceable, vague, and uncertain SPRs in place of the enforceable mitigation measures required under CEQA. The DEIR improperly relies on these vague SPRs to determine that each and every one of the Program's adverse impacts would be reduced to a less-than-significant level.

III. The DEIR Fails to Provide an Accurate, Stable, and Finite Project Description

In order for an environmental document to adequately evaluate the environmental ramifications of a project, it must first provide a comprehensive description of the project itself. An EIR must describe a proposed project with sufficient detail and accuracy to permit informed decision-making. *See* CEQA Guidelines § 15124. Indeed, "[a]n accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR." *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus*, 27 Cal. App. 4th 713, 730 (1994), quoting *County of Inyo v. City of Los Angeles*, 71 Cal. App. 3d 185, 193 (1977). As a result, courts have found that, even if an EIR is adequate in all other respects, the use of a "truncated project concept" violates CEQA and mandates the conclusion that the lead agency did not proceed in a manner required by law. *San Joaquin Raptor*, 27 Cal. App. 4th at 730. Furthermore, "[a]n accurate project description is necessary for an intelligent evaluation of the potential environmental effects of a proposed activity." *Id.* (citation omitted). Thus, an inaccurate or incomplete project description renders the analysis of significant environmental impacts inherently unreliable. *See Communities for a Better Env't v. City of Richmond*, 184 Cal. App. 4th 70, 82-83 (2010) (approval of EIR based on inadequate project description constitutes legal error).

Here, the DEIR's basic description of the Program is impermissibly vague and unstable. The DEIR states that the VTP will implement a wide range of fuel treatment projects across a vast area encompassing 21.9 million acres of habitat in California. DEIR at 3-10. Projects conducted under the VTP fall into three general types (wildland-urban interface, fuel breaks, and ecological restoration projects) that are subject to a potential "menu" of six broad vegetation treatment types (prescribed fire with pile burn, prescribed fire with broadcast burn, mechanical treatment, manual treatment, prescribed herbivory, and herbicides). DEIR at 2-16-17. These treatments "may be applied singularly or in any combination needed for a particular vegetation type to meet specific resource management objectives." DEIR at 2-33. Adding to the Program's uncertainty, the DEIR provides only gross approximations of the proportions of treatment types to be applied in each bioregion, and sets no limits on treatment amounts. DEIR at 2-38. Instead, the vegetation treatment type that will be applied is determined only at the project-level ("during the planning phase of a VTP project, the appropriate activity would be selected," DEIR at 2-33); similarly, the regimen of follow-up maintenance activities is set at the project-level. DEIR at 2-35 ("In general, all vegetation types require follow up maintenance to meet long-term vegetation management goals. The type of follow-up treatment and interval between treatments would depend on site conditions and project objectives."). Overall, within a ten-year period the DEIR estimates that there would be approximately 2,301 projects implemented with an average of 231 projects per year and 60,000 acres treated annually. Once again, the maximum number of acres treated every year is uncertain and unbounded ("the actual acres treated annually in any region will vary year-to-year based on several factors," DEIR at 2-35) and the locations where treatment activities could occur are provided only at an extremely coarse scale (see maps at Figures ES-1, 2.2-5, 2.2-8, 2.2-10, and 2.2-12). In essence, Cal Fire fails to provide any stable or finite definition of the types and amounts of treatments that will be applied to the landscape, nor where treatments will be applied.

The lack of a stable and finite project description renders analysis of the Project's environmental impacts impossible. The DEIR acknowledges that each type of treatment activity will have different environmental impacts. DEIR at 2-38 ("each of these activity types can have a characteristic impact on the environment"). However, without knowing which treatment types and amounts will be used in each bioregion, there is no way of assessing the environmental impacts that the Program's treatments will incur. Accordingly, the DEIR fails to provide an adequate description of the Project.

IV. The DEIR Does Not Consider a Reasonable Range of Alternatives

The DEIR does not complete an adequate analysis of project alternatives. The mitigation and alternatives sections are the "core" of the EIR, and an agency should not approve a project as proposed if there are feasible alternatives or mitigation measures that would substantially lessen the impact of the project. Pub. Resources Code § 21002; *Habitat and Watershed Caretakers v. City of Santa Cruz*, 213 Cal. App. 4th 1277, 1302 (2013). Under CEQA, an EIR must consider a range of reasonable alternatives that would feasibly attain most of the objectives of the Program while avoiding or substantially lessening its significant impacts, and must compare the relative merits of these alternatives. CEQA Guidelines § 15126.6. Furthermore, the range of alternatives should be designed to "foster informed decision making." *Id*. The alternatives presented in the DEIR, however, fail to present a "range" because each alternative is simply some portion or combination of the same components as the preferred alternative. Yet, there are feasible alternatives that were not presented and would meet the objectives of the project and lessen environmental impacts. For instance, wildfire damage could be significantly reduced using a program that focuses "from the house out"[2] to reduce home flammability without extensive biomass removal.

The DEIR also dismisses a number of alternatives from consideration without sufficient analysis. Under CEQA, an agency must identify alternatives that were considered but rejected as infeasible. CEQA Guidelines §15126.6(c). In doing so, the agency must provide a reasoned analysis of its reasons because the public should not be expected to accept its determination on blind trust. *Laurel Heights Improvement Assn of San Francisco v. Regents of the University of California*, 47 Cal. 3d 376, 404 (1988); *Habitat and Watershed Caretakers v. City of Santa Cruz*, 213 Cal. App. 4th 1277, 1305 (2013). Furthermore, "an EIR should not exclude an alternative from detailed consideration merely because it would impede to some degree the attainment of the project objectives." *In re Bay-Delta*, 43 Cal. 4th 1143, 1165 (2008). Here, the DEIR rejects in rapid succession seven alternatives from further consideration. The DEIR quickly rejects these alternatives as failing to achieve project objectives and as "not consistent with 2010 Strategic Fire Plan for California or the 2012 Strategic Plan." DEIR at 3-37 to 3-40. Yet no explanation is given for what parts of these Strategic Plans are inconsistent or what aspects of the Project conflict with the stated objectives. Moreover, a generic and conclusory assertion of conflict with an agency's vision for management is not a valid basis for finding an alternative infeasible. The DEIR fails to provide adequate "facts or analysis" to enable the public to "understand and consider meaningfully the issues raised by the proposed project." *Laurel Heights*, 47 Cal. 3d at 405-405.

One alternative that the DEIR must analyze is a VTP limited to treating the defensible space around homes and other structures. As detailed below (Section V.H), on-the-ground research indicates that vegetation management within the defensible space in the 40-meter radius surrounding individual homes effectively protects homes from wildland fire, even intense fire, whereas management beyond the defensible space does not effectively protect homes. An alternative that analyzes vegetation treatments only in defensible space would greatly minimize the significant impacts of the Project while maximizing the protection of people, property, and natural resources of California, the stated mission of the Board and CalFire. DEIR at E-2.

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[2] See http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_faqs#gen01.

V. The DEIR's Justification for the VTP Is Not Based on Substantial Evidence

The DEIR's justification for the VTP is predicated on assertions that are either unsupported by the best-available science or highly uncertain. The DEIR states that the purpose of the VTP is "lowering the risk of damaging wildfire in the SRA by managing wildland fuels through the use of environmentally appropriate vegetation treatments." DEIR at E-2. The DEIR asserts that "[i]n some forested portions of California fire suppression has created an uninterrupted accumulation of wildland fuels with resultant increases in fire hazard" (DEIR at E-1)[3] and that "climate change suggests a continuing and even accelerated risk from wildfire," including large-scale mortality from insects. DEIR at E-2.

However, the DEIR fails to provide supporting scientific evidence to show that wildfire in California's forests is burning at unnatural or unusual levels or severities and therefore should be reduced. The DEIR similarly presents no evidence showing that fire suppression and bark beetle outbreaks have led to increased fire activity in California. The DEIR further ignores the extensive body of scientific studies examining current effects of climate change on wildfire activity which indicates that fire severity and amount have not increased in California's forests. In addition, studies projecting the influence of climate change on future fire activity indicate that fire severity in California forests is likely to stay the same or decrease, and that climate change effects on future fire activity are highly uncertain. The DEIR makes no effort to address this evidence.

In contrast to the DEIR's unsupported assertions, the best-available science detailed below indicates that (1) wildfire is a natural and necessary component of California forests, California's mixed-conifer and ponderosa pine forests have been historically characterized by mixed-severity fire including significant amounts of high-severity fire, and high-severity fire creates biodiverse, ecologically important, and unique habitat; (2) California forests are experiencing a deficit of fire compared with historical conditions; (3) California's forests are not burning at higher severity or amount, nor are the most long-unburned forests burning at higher severity; (4) the projected effects of climate change on fire activity in California are highly uncertain; (5) bark beetle outbreaks have not increased annual area burned or fire severity; (6) trees killed by drought and beetles do not increase fire intensity or extent; and (7) vegetation management within the defensible space immediately surrounding homes effectively protects homes from wildland fire.

As a result, the DEIR is out of touch with the best-available science on wildfire activity in California and fails to provide a defensible justification for the VTP. Of added concern, the body of science detailed below demonstrates that treatment activities to reduce wildfire pursuant to the DEIR are likely to cause significant environmental harm to California's ecosystems.

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[3] Similarly, the DEIR states: "catastrophic high severity wildfire; which in most cases in California is the inevitable eventual consequence of lack of fuel reduction coupled with fire suppression." DEIR at 4-117.

While these comments focus on the DEIR's deficiencies related to forests, the DEIR is also scientifically unsupported in its discussion and analysis of shrublands, particularly chaparral, and grasslands, as detailed by other commentators. See comments submitted 24 May 2016 and 27 May 2106 by the California Chaparral Institute (incorporated by reference).

A. Wildfire, including high-severity fire, is a natural and necessary component of California's forested landscapes.

1. California mixed-conifer and ponderosa pine forests are characterized by mixed-severity fire.

Numerous studies and multiple lines of evidence demonstrate that California's mixed-conifer and ponderosa pine forests are characterized by mixed-severity fire that includes ecologically significant amounts of high-severity fire. Mixed-severity fire creates complex successional diversity, high biological diversity, and diverse stand structure across California's forested landscapes.

Baker 2014: A reconstruction of historical forest structure and fire across 330,000 ha of Sierra Nevada mixed-conifer forests using data from 1865-1885 demonstrates that these historical forests experienced mixed-severity fire over 43-48% of the land area, with high-severity fire over 31-39% and low-severity fire over just 13-26%. Historical forests were generally dense with abundant large trees, but numerically dominated by smaller pines and oaks. Smaller trees, understory seedlings, saplings and shrubs created abundant ladder fuels. The high-severity fire rotation was 281 years in the northern and 354 years in the southern Sierra, which contributed to high levels of heterogeneity, including abundant areas and large patches (up to 9,400 ha) of early successional forest and montane chaparral, as well as old-growth forest over large land areas. The author concludes that "[p]roposals to reduce fuels and fire severity would actually reduce, not restore, historical forest heterogeneity important to wildlife and resiliency."[4]

Beaty and Taylor 2001: On the western slope of the southern Cascades in California, historical fire intensity in mixed-conifer forests was predominantly moderate- and high-intensity, except in mesic canyon bottoms, where moderate- and high-intensity fire comprised 40.4% of fire effects [Table 7].)[5]

[4] Baker, W.L. 2014. Historical forest structure and fire in Sierran mixed-conifer forests reconstructed from General Land Office survey data. Ecosphere 5(7): Article 79.
[5] Beaty, R.M. and A.H. Taylor. 2001. Spatial and temporal variation of fire regimes in a mixed conifer forest landscape, Southern Cascades, USA. Journal of Biogeography 28: 955–966.

Bekker and Taylor 2001: On the western slope of the southern Cascades in California, in mixed-conifer forests, fire was predominantly high-intensity historically [Fig. 2F].[6]

Bekker and Taylor 2010: In mixed-conifer forests of the southern Cascades, reconstructed fire severity within the study area was dominated by high-severity fire effects, including high-severity fire patches over 2,000 acres in size [Tables I and II].[7]

Collins and Stephens 2010: In a modern "reference" forest condition within mixed-conifer/fir forests in Yosemite National Park, 15% of the area experienced high-intensity fire over a 33-year period—a high-intensity fire rotation interval of approximately 223 years.[8]

Halofsky et al. 2011: In the Klamath-Siskiyou Mountains of northwestern California and southwestern Oregon, a mixed-severity fire regime produces structurally diverse vegetation types with intimately mixed patches of varied age. The close mingling of early- and late-seral communities results in unique vegetation and wildlife responses, including high resilience of plant and wildlife species to mixed-severity fire.[9]

Hanson and Odion 2016: An assessment of US Forest Service forest survey data from 1910 and 1911 for central and southern Sierra Nevada ponderosa pine and mixed-conifer forests indicates that these historical forests had a mixed-severity fire regime, with an average of 26% high-severity fire effects. This study's findings are contrary to those of several other reports that use a very small subset of the available data from the 1910 and 1911 surveys, demonstrating the importance of analyzing data from sufficiently large spatial scales when drawing inferences about historical conditions.[10]

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[6] Bekker, M.F. and A.H. Taylor. 2001. Gradient analysis of fire regimes in montane forests of the southern Cascade Range, Thousand Lakes Wilderness, California, USA. Plant Ecology 155: 15-28.

[7] Bekker, M.F. and A.H. Taylor. 2010. Fire disturbance, forest structure, and stand dynamics in montane forest of the southern Cascades, Thousand Lakes Wilderness, California, USA. Ecoscience 17: 59-72.

[8] Collins, B.M. and S.L. Stephens. 2010. Stand-replacing patches within a mixed severity fire regime: quantitative characterization using recent fires in a long-established natural fire area. Landscape Ecology 25: 927939.

[9] Halofsky, J. E., D.C. Donato, D.E. Hibbs, J.L. Campbell, M. Donaghy Cannon, J.B. Fontaine, J.R. Thompson, R.G. Anthony, B.T. Bormann, L.J. Kayes, B.E. Law, D.L. Peterson, and T.A. Spies. 2011. Mixed-severity fire regimes: lessons and hypotheses from the Klamath-Siskiyou Ecoregion. Ecosphere 2(4): art40.

[10] Hanson, C.T. and D.C. Odion. 2016. Historical fire conditions within the range of the Pacific fishers and spotted owl in the central and southern Sierra Nevada, California, USA. Natural Areas Journal 36: 8-19.

Nagel and Taylor 2005: The authors found that large high-severity fire patches were a natural part of 19th century fire regimes in mixed-conifer and eastside pine forests of the Lake Tahoe Basin, and montane chaparral created by high-severity fire has declined by 62% since the 19th century due to reduced high-severity fire occurrence. The authors expressed concern about harm to biodiversity due to loss of ecologically rich montane chaparral.[11]

Odion et al. 2014: In the largest and most comprehensive analysis conducted to date regarding the historical occurrence of high-intensity fire, the authors found that ponderosa pine and mixed-conifer forests in every region of western North America had mixed-intensity fire regimes, which included substantial occurrence of high-intensity fire. The authors also found, using multiple lines of evidence, including over a hundred historical sources and fire history reconstructions, and an extensive forest age-class analysis, that we now have unnaturally low levels of high-intensity fire in these forest types in all regions, since the beginning of fire suppression policies in the early 20th century.[12]

2. High-severity fire creates important habitat critical to numerous species.

High-severity fire creates complex, biodiverse, ecologically important, and unique habitat (often called "snag forest habitat"), which often has higher species richness and diversity than unburned old forest. Plant and animal species in the forest evolved with fire, and many of these species (such as the black-backed woodpecker[13]) depend on wildfires, and particularly high-severity fires, to reproduce and grow. Fire helps to return nutrients from plant matter back to soil, the heat from fire is necessary to the germination of certain types of seeds, and the snags (dead trees) and early successional forests created by high-severity fire create habitat conditions that

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[11] Nagel, T.A. and A. H. Taylor. 2005. Fire and persistence of montane chaparral in mixed conifer forest landscapes in the northern Sierra Nevada, Lake Tahoe Basin, California,USA. J. Torrey Bot. Soc.132: 442-457.

[12] Odion, D.C., C.T. Hanson, A. Arsenault, W.L. Baker, D.A. DellaSala, R.L. Hutto, W. Klenner, M.A. Moritz, R.L. Sherriff, T.T. Veblen, and M.A. Williams. 2014. Examining historical and current mixed-severity fire regimes in Ponderosa pine and mixed-conifer forests of western North America. Plos One 9(2): e87852. *See also* response and rebuttal: Odion D.C., C.T. Hanson, W.L. Baker, D.A. DellaSala, and M.A. Williams. 2016. Areas of agreement and disagreement regarding ponderosa pine and mixed conifer forest fire regimes: a dialogue with Stevens et al. PLoS ONE 11(5): e0154579; Stevens J.T. et al. 2016. Average stand age from forest inventory plots does not describe historical fire regimes in ponderosa pine and mixed-conifer forests of western North America. PLoS ONE 11(5): e0147688.

[13] Seavy, N.E., R.D. Burnett, and P.J. Taille. 2012. Black-backed woodpecker nest tree preference in the burned forests of the Sierra Nevada, California. Wildlife Society Bulletin 36: 722-728; Tingely, M.W., R.L. Wilkerson, M.L. Bond, C.A. Howell, and R.B. Siegel. 2014. Variation in home-range size of black-backed woodpeckers. The Condor 116: 325-340.

are beneficial to wildlife. Early successional forests created by high-severity fire support some of the highest levels of native biodiversity found in temperate conifer forests.

Bond et al. 2009: In a radio-telemetry study, California spotted owls preferentially selected high-intensity fire areas, which had not been salvage logged, for foraging, while selecting low- and moderate-intensity areas for nesting and roosting.[14]

Buchalski et al. 2013: In mixed-conifer forests of the southern Sierra Nevada, rare myotis bats were found at greater levels in unmanaged high-severity fire areas of the McNally fire than in lower fire severity areas or unburned forest.[15]

Burnett et al. 2010: Bird species richness was approximately the same between high-severity fire areas and unburned mature/old forest at 8 years post-fire in the Storrie fire, and total bird abundance was greatest in the high-severity fire areas of the Storrie fire [Figure 4]. Nest density of cavity-nesting species increased with higher proportions of high-severity fire, and was highest at 100% [Figure 8].[16]

Cocking et al. 2014: High-intensity fire areas are vitally important to maintain and restore black oaks in mixed-conifer forests.[17]

DellaSala et al. 2014: Complex early seral forests in the Sierra Nevada of California, which are produced by mixed-severity fire including large high severity patches, support diverse plant and wildlife communities that are essential to the region's ecological integrity. Fire suppression and biomass removal after fire reduce structural complexity, diversity, and resilience in the face of climate change.[18]

Donato et al. 2009: The high-severity re-burn [high-severity fire occurring 15 years after a previous high-severity fire] had the highest plant species richness and total plant cover, relative to high-severity fire alone [no re-burn] and unburned mature/old forest; and the high-

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[14] Bond, M.L., D.E. Lee, R.B. Siegel, and J.P. Ward, Jr. 2009. Habitat use and selection by California Spotted Owls in a postfire landscape. Journal of Wildlife Management 73: 1116-1124.
[15] Buchalski, M.R., J.B. Fontaine, P.A. Heady III, J.P. Hayes, and W.F. Frick. 2013. Bat response to differing fire severity in mixed-conifer forest, California, USA. PLoS ONE 8: e57884.
[16] Burnett, R.D., P. Taillie, and N. Seavy. 2010. Plumas Lassen Study 2009 Annual Report. U.S. Forest Service, Pacific Southwest Region, Vallejo, CA.
[17] Cocking M.I., J.M. Varner JM, and E.E. Knapp. 2014. Long-term effects of fire severity on oak-conifer dynamics in the southern Cascades. Ecological Applications 24: 94-107.
[18] DellaSala, D., M.L. Bond, C.T. Hanson, R.L. Hutto, and D.C. Odion. 2014. Complex early seral forests of the Sierra Nevada: what are they and how can they be managed for ecological integrity? Natural Areas Journal 34: 310-324.

severity fire re-burn area had over 1,000 seedlings/saplings per hectare of natural conifer regeneration.[19]

Franklin et al. 2000: The authors found that stable or increasing populations of spotted owls resulted from a mix of dense old forest and complex early seral habitat, and less than approximately 25% complex early seral habitat in the home range was associated with declining populations [Fig. 10]; the authors emphasized that the complex early seral habitat was consistent with high-intensity fire effects, and inconsistent with clearcut logging.[20]

Hanson and North 2008: Black-backed woodpeckers depend upon dense, mature/old forest that has recently experienced higher-intensity fire, and has not been salvage logged.[21]

Hanson 2013: Pacific fishers use pre-fire mature/old forest that experienced moderate/high-intensity fire more than expected based upon availability, just as fishers are selecting dense, mature/old forest in its unburned state. When fishers are near fire perimeters, they strongly select the burned side of the fire edge. Both males and female fishers are using large mixed-intensity fire areas, such as the McNally fire, including several kilometers into the fire area.[22]

Hanson 2015: Pacific fisher females in the Sierra Nevada use unlogged higher severity fire areas, including very large high-severity patches. In the McNally fire area at 10 to 11 years postfire, female fishers used the large, intense fire area significantly more than unburned forest, and females were detected at multiple locations >250m into the interior of a very large (>5,000 ha), unlogged higher severity fire patch. The author concludes that these results "suggest a need to revisit current management direction, which emphasizes extensive commercial thinning and postfire logging to reduce fuels and control fire."[23]

Hutto 1995: *A study in the northern Rocky Mountain region found that 15 bird species are generally more abundant in early post-fire communities than in any other major cover type*

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[19] Donato, D.C., J.B. Fontaine, W.D. Robinson, J.B. Kauffman, and B.E. Law. 2009. Vegetation response to a short interval between high-severity wildfires in a mixed-evergreen forest. Journal of Ecology 97:142-154.
[20] Franklin, A.B., D.R. Anderson, R.J. Gutierrez, and K.P. Burnham. 2000. Climate, habitat quality, and fitness in northern spotted owl populations in northwestern California.Ecological Monographs 70: 539-590.
[21] Hanson, C. T. and M. P. North. 2008. Postfire woodpecker foraging in salvage-logged and unlogged forests of the Sierra Nevada. Condor 110: 777–782.
[22] Hanson, C.T. 2013. Pacific fisher habitat use of a heterogeneous post-fire and unburned landscape in the southern Sierra Nevada, California, USA. The Open Forest Science Journal 6: 24-30.
[23] Hanson, C.T. 2015. Uses of higher severity fire areas by female Pacific fishers on the Kern Plateau, Sierra Nevada, California, USA. Wildlife Society Bulletin 39: 497-502.

occurring in the northern Rockies. Standing, fire-killed trees provided nest sites for nearly two-thirds of 31 species that were found nesting in the burned sites.[24]

Hutto 2008: Severely burned forest conditions have occurred naturally across a broad range of forest types for millennia and provide an important ecological backdrop for fire specialists like the black-backed woodpecker.[25]

Hutto et al. 2016: This review highlights that high severity fire was historically common in western conifer forests and is ecologically essential. Many animal and plant species depend on severely burned forests for persistence. The researchers recommend a "more ecologically informed view" of severe forest fire, including changes in management and education to maintain ecologically necessary levels of severe fire and the complex early-seral forest conditions it creates.[26]

Lee and Bond 2015: California spotted owls exhibited high site occupancy in post-fire landscapes during the breeding season following the 2013 Rim Fire, even where large areas burned at high severity; the complex early seral forests created by high-severity fire appear to provide important habitat for the small mammal prey of the owl.[27]

Malison and Baxter 2010: In ponderosa pine and Douglas-fir forests of Idaho at 5-10 years post-fire, levels of aquatic insects emerging from streams were two and a half times greater in high-intensity fire areas than in unburned mature/old forest, and bats were nearly 5 times more abundant in riparian areas with high-intensity fire than in unburned mature/old forest.[28]

Ponisio et al. 2016: A study of plant–pollinator communities in mixed-conifer forest in Yosemite National Park found that pyrodiversity (the diversity of fires within a region) increases the richness of the pollinators, flowering plants, and plant-pollinator interactions, and buffers pollinator communities against the effects of drought-induced floral resource scarcity. The

[24] Hutto, R. L. 1995. Composition of bird communities following stand-replacement fires in Northern Rocky Mountain (U.S.A.) conifer forests. Conservation Biology 9: 1041–1058.
[25] Hutto, R. L. 2008. The ecological importance of severe wildfires: Some like it hot. Ecological Applications 18: 1827–1834.
[26] Hutto, R.L., R.E. Keane, R.L. Sherriff, C.T. Rota, L.A. Eby, and V.A. Saab. 2016. Toward a more ecologically informed view of severe forest fires. Ecosphere 7(2):e01255.
[27] Lee, D.E. and M.L. Bond. 2015. Occupancy of California spotted owl sites following a large fire in the Sierra Nevada, California. The Condor 117: 228-236.
[28] Malison, R.L. and C.V. Baxter. 2010. The fire pulse: wildfire stimulates flux of aquatic prey to terrestrial habitats driving increases in riparian consumers. Canadian Journal of Fisheries and Aquatic Sciences 67: 570-579.

authors conclude that lower fire diversity is likely to negatively affect the richness of plant–pollinator communities across large spatial scales. [29]

Raphael et al. 1987: At 25 years after high-intensity fire, total bird abundance was slightly higher in snag forest than in unburned old forest in eastside mixed-conifer forest of the northern Sierra Nevada; and bird species richness was 40% higher in snag forest habitat. In earlier post- fire years, woodpeckers were more abundant in snag forest, but were similar to unburned by 25 years post-fire, while flycatchers and species associated with shrubs continued to increase to 25 years post-fire.[30]

Sestrich et al. 2011: Native bull and cutthroat trout tended to increase with higher fire intensity, particularly where debris flows occurred. Nonnative brook trout did not increase.[31]

Siegel et al. 2012: Many more species occur at high burn severity sites starting several years post-fire, and these include the majority of ground and shrub nesters as well as many cavity nesters. Secondary cavity nesters, such as swallows, bluebirds, and wrens, are particularly associated with severe burns, but only after nest cavities have been created, presumably by the pioneering cavity excavating species such as the black-backed woodpecker. As a result, fires that create preferred conditions for black-backed woodpeckers in the early post-fire years will likely result in increased nesting sites for secondary cavity nesters in successive years.[32]

Swanson et al. 2010: A literature review concluding that some of the highest levels of native biodiversity found in temperate conifer forest types occur in complex early successional habitat created by stand-initiating [high severity] fire.[33]

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[29] Ponisio, L.C., K. Wilken, L.M. Gonigle, K. Kulhanek, L. Cook, R. Thorp, T. Griswold, and C. Kremen. 2016. Pyrodiversity begets plant-pollinator community diversity. Global Change Biology 22: 1794-1808.
[30] Raphael, M.G., M.L. Morrison, and M.P. Yoder-Williams. 1987. Breeding bird populations during twenty-five years of postfire succession in the Sierra Nevada. The Condor 89: 614-626.
[31] Sestrich, C.M., T.E. McMahon, and M.K. Young. 2011. Influence of fire on native and nonnative salmonid populations and habitat in a western Montana basin. Transactions of the American Fisheries Society 140: 136-146.
[32] Siegel, R.B., M.W. Tingley, and R.L. Wilkerson. 2012. Black-backed Woodpecker MIS surveys on Sierra Nevada national forests: 2011 Annual Report. A report in fulfillment of U.S. Forest Service Agreement No. 08-CS-11052005-201, Modification #4; U.S. Forest Service Pacific Southwest Region, Vallejo, CA.
[33] Swanson, M.E., J.F. Franklin, R.L. Beschta, C.M. Crisafulli, D.A. DellaSala, R.L. Hutto, D. Lindenmayer, and F.J. Swanson. 2010. The forgotten stage of forest succession: early-successional ecosystems on forest sites. Frontiers Ecology & Environment 9: 117-125.

B. California's forests have a deficit of fire, including a deficit of high-severity fire, compared with historical conditions.

Studies indicate that California's forests are experiencing a significant fire deficit compared with pre-settlement conditions, meaning that there is much less fire on the landscape than there was historically (Mouillet and Field 2005, Stephens et al. 2007, Marlon et al. 2012, Odion et al. 2014, Parks et al. 2015).[34] A recent analysis by Parks et al (2015) reported that California forests, including Sierra Nevada and southern Cascades forests, experienced a significant fire deficit during the recent 1984-2012 study period, attributed to fire suppression activities.[35] According to Stephens et al. (2007), prior to 1800, an estimated 18 to 47 times more area burned each year in California, including 20 to 53 times more forest area, than has burned annually during recent decades: "skies were likely smoky much of the summer and fall." This study estimated that 1.8 million to 4.8 million hectares burned each year in California prior to 1800, of which 0.5 million to 1.2 million hectares were forest, compared to just 102,000 hectares burned each year between 1950-1999, of which 23,000 hectares were forest. Based on this extreme fire deficit, Stephens et al. (2007) recommend "increasing the spatial extent of fire in California [as] an important management objective." Odion et al. (2014) similarly found evidence that there is currently much less high-severity fire in California's mixed-conifer and ponderosa pine forests than compared with historical levels.

C. Scientific studies are finding no significant trends in wildfire activity: California forests are not experiencing an increase in fire severity or burned area.

Scientific evidence does not indicate that wildfire activity is at unnatural levels in California's forests and therefore must be reduced. Notably, the majority of studies that have analyzed recent trends in fire severity, area burned, and fire frequency in California forests have found no significant trends in these metrics.

Eleven studies have analyzed recent trends in fire severity in California's forests in terms of proportion, area, and/or patch size. Nine of eleven studies found no significant trend in fire

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[34] Mouillot, F. and C. Field. 2005. Fire history and the global carbon budget: a 1º x 1º fire history reconstruction for the 20th century. Global Change Biology 11: 398-420; Stephens, S.L., R.E. Martin, and N.E. Clinton. 2007. Prehistoric fire area and emissions from California's forests, woodlands, shrublands and grasslands. Forest Ecology and Management 251: 205-216; Marlon, J.R., Bartlein, P.J., Gavin, D.G., Long, C.J., Anderson, R.S., Briles, C.E., Brown, K.J., Colombaroli, D., Hallett, D.J., Power, M.J., Scharf, E.A., and M.K. Walsh. 2012. Long-term perspective on wildfires in the western USA. PNAS 109: E535–E543; Odion, D.C. et al. 2014; Parks, S.A., C. Miller, M-A Parisien, L.M. Holsinger, S.Z. Dobrowski, and J. Abatzoglou. 2015. Wildland fire deficit and surplus in the western United States, 1984-2012. Ecosphere 6: Article 275.

[35] Parks, S.A. et al. 2015.

severity, including: Baker 2015 (California dry pine and mixed conifer forests), Collins et al. 2009 (central Sierra Nevada), Dillon et al. 2011 (Northwest California), Hanson et al. 2009 (Klamath, southern Cascades), Hanson and Odion 2014 (Sierra Nevada, southern Cascades), Miller et al. 2012 (four Northwest CA forests), Odion et al. 2014 (eastern and western Sierra Nevada, eastern Cascades), Picotte et al. 2016 (California forest and woodland), and Schwind 2008 (California forests).[36] The two studies that report an increasing trend in fire severity—Miller et al. 2009 and Miller and Safford 2012 (Sierra Nevada, southern Cascades)[37]—were refuted by Hanson and Odion (2014) using a larger dataset.

Hanson and Odion (2014) conducted the first comprehensive assessment of fire intensity since 1984 in the Sierra Nevada using 100% of available fire intensity data, and found no increasing trend in terms of high-intensity fire proportion, area, mean patch size, or maximum patch size. Hanson and Odion (2014) reviewed the approach of Miller et al. (2009) and Miller and Safford (2012) for bias, due to the use of vegetation layers that post-date the fires being analyzed in those studies. Hanson and Odion (2014) found that there is a statistically significant bias in both studies ($p = 0.025$ and $p = 0.021$, respectively), the effect of which is to exclude relatively more conifer forest experiencing high-intensity fire in the earlier years of the time series, thus creating the erroneous appearance of an increasing trend in fire severity. Hanson and Odion (2014) also found that the regional fire severity data set used by Miller et al. (2009) and Miller and Safford (2012) disproportionately excluded fires in the earlier years of the time series,

[36] Baker, W.L. 2015. Are high-severity fires burning at much higher rates recently than historically in dry-forest landscapes of the Western USA? PLoS ONE 10(9): e0136147; Collins, B.M., J.D. Miller, A.E. Thode, M. Kelly, J.W. van Wagtendonk, and S.L. Stephens. 2009. Interactions among wildland fires in a long-established Sierra Nevada natural fire area. Ecosystems 12:114–128; Dillon, G.K., et al. 2011. Both topography and climate affected forest and woodland burn severity in two regions of the western US, 1984 to 2006. Ecosphere 2: Article 130; Hanson, C.T., D.C. Odion, D.A. DellaSala, and W.L. Baker. 2009. Overestimation of fire risk in the Northern Spotted Owl Recovery Plan. Conservation Biology 23:1314–1319; Hanson, C.T., and D.C. Odion. 2014. Is fire severity increasing in the Sierra Nevada mountains, California, USA? International Journal of Wildland Fire 23: 1-8; Miller, J.D., C.N. Skinner, H.D. Safford, E.E. Knapp, and C.M. Ramirez. 2012. Trends and causes of severity, size, and number of fires in northwestern California, USA. Ecological Applications 22: 184-203; Odion, D.C. et al. 2014; Picotte, J.J., B. Peterson, G. Meier, and S.M. Howard. 2016. 1984-2010 trends in fire burn severity and area for the coterminous US. International Journal of Wildland Fire 25: 413-420; Schwind, B. 2008. Monitoring trends in burn severity: report on the Pacific Northwest and Pacific Southwest fires (1984 to 2005). USGS.

[37] Miller, J.D., H.D. Safford, M.A. Crimmins, and A.E. Thode. 2009. Quantitative evidence for increasing forest fire severity in the Sierra Nevada and southern Cascade Mountains, California and Nevada, USA. Ecosystems 12:16–32; Miller, J.D. and H. Safford. 2012. Trends in wildfire severity: 1984-2010 in the Sierra Nevada, Modoc Plateau, and southern Cascades, California, USA. Fire Ecology 8(2): 41-57.

relative to the standard national fire severity data set (www.mtbs.gov) used in other fire severity trend studies, resulting in an additional bias which created, once again, the inaccurate appearance of relatively less high-severity fire in the earlier years, and relatively more in more recent years.

Of note, Baker (2015) found that the rate of recent (1984–2012) high-severity fire in dry pine and mixed conifer forests in California is within the range of historical rates, or is too low. There were no significant upward trends from 1984–2012 for area burned and fraction burned at high severity. The author concluded that "[p]rograms to generally reduce fire severity in dry forests are not supported and have significant adverse ecological impacts, including reducing habitat for native species dependent on early-successional burned patches and decreasing landscape heterogeneity that confers resilience to climatic change."

In studies of area burned, Dennison et al. (2014) found no significant increase in annual fire area in the Sierra Nevada/Klamath/Cascades forest ecoregion in California during the 1984-2011 study period, nor a significant trend toward an earlier fire season in this or any other western ecoregion.[38] Similarly, Dillon et al. (2011) detected no trends in annual area burned in the two ecoregions that occur in part in northern California (i.e., Pacific, Inland Northwest) during the 1984-2006 study period.[39]

Studies that have analyzed recent trends in the number of fires in California's forests have reported conflicting results. Two studies found no trend in the number of fires: Schwind (2008) and Syphard et al. (2007).[40] Westerling et al. (2006) averaged data across forested regions in the western United States between 1970 and 2003 and reported that a marked shift occurred during the mid-1980s toward a higher frequency of large fires in the western US, although trends since the mid-1980s were less clear.[41]

D. The most long-unburned forests are not burning at higher fire severity.

Studies empirically investigating the assumption that the most long-unburned forests are burning predominantly at high severity have consistently found that forest areas in California that have missed the largest number of fire return intervals are not burning at higher fire severity. Specifically, six empirical studies that have investigated this question found that the most long-

[38] Dennison, P.E., Brewer, S.C., Arnold, J.D., and M.A. Moritz. 2014. Large wildfire trends in the western United States, 1984-2011. Geophysical Research Letters 41: 2928–2933.
[39] Dillon, G.K., et al. 2011.
[40] Schwind, B. 2008; Syphard, A.D., V.C. Radeloff, J.E. Keeley, T.J. Hawbaker, M.K. Clayton, S.I. Stewart, and R.B. Hammer. 2007. Human influence on California fire regimes. Ecological Applications 17(5): 1388-1402.
[41] Westerling A.L., H.G. Hidalgo, D.R. Cayan, T.W. Swetnam. 2006. Warming and earlier spring increase western US forest wildfire activity. Science 313: 940–43.

unburned (most fire-suppressed) forests burned mostly at low/moderate-severity, and did not have higher proportions of high-severity fire than less fire-suppressed forests. Forests that were not fire suppressed (those that had not missed fire cycles, i.e., Condition Class 1, or "Fire Return Interval Departure" class 1) generally had levels of high-severity fire similar to, or higher than, those in the most fire-suppressed forests, as found by Odion et al. 2004, Odion and Hanson 2006, Odion and Hanson 2008, Odion et al. 2010, Miller et al. 2012, and van Wagtendonk et al. 2012.[42]

E. The projected impacts of climate change on wildfire activity in California are uncertain.

While climate change will almost certainly alter fire activity in many California ecosystems, scientific research does not indicate that climate change will increase fire severity nor necessarily increase fire amount in California forests. As described above, the majority of studies that have analyzed recent wildfire trends in California forests have found no significant trends in fire activity. Studies that project trends in fire activity under climate change scenarios indicate that fire severity in California forests is likely to stay the same or decrease, and projection studies show no consensus on how climate change is likely to affect future fire probability or area burned in California forests, as detailed below.

Notably, a recent study by Parks et al. (2016) projected that most areas of the western US, including California's forested areas, will experience decreases or no change in fire severity by mid-century (2040-2069) under the highest-emission RCP 8.5 scenario used in global climate models.[43] Three studies that have projected changes in the probability of burning or the probability of a large fire occurring show no consensus, with projections for no change,

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[42] Odion, D.C., E.J. Frost, J.R. Strittholt, H. Jiang, D.A. DellaSala, and M.A. Moritz. 2004. Patterns of fire severity and forest conditions in the Klamath Mountains, northwestern California. Conservation Biology 18: 927-936; Odion, D.C., and C.T. Hanson. 2006. Fire severity in conifer forests of the Sierra Nevada, California. Ecosystems 9: 1177-1189; Odion, D.C., and C.T. Hanson. 2008. Fire severity in the Sierra Nevada revisited: conclusions robust to further analysis. Ecosystems 11: 12-15; Odion, D. C., M. A. Moritz, and D. A. DellaSala. 2010. Alternative community states maintained by fire in the Klamath Mountains, USA. Journal of Ecology; Miller, J.D., C.N. Skinner, H.D. Safford, E.E. Knapp, and C.M. Ramirez. 2012. Trends and causes of severity, size, and number of fires in northwestern California, USA. Ecological Applications 22:184-203; van Wagtendonk, J.W., K.A. van Wagtendonk, and A.E. Thode. 2012. Factors associated with the severity of intersecting fires in Yosemite National Park, California, USA. Fire Ecology 8: 11-32.

[43] Parks, S.A., C. Miller, J.T. Abatzoglou, L.M. Holsinger, M-A. Parisien, and S. Dobrowski. 2016. How will climate change affect wildland fire severity in the western US? Environmental Research Letters 11: 035002.

increases, or decreases in fire varying by region: Krawchuk and Moritz 2012, Moritz et al. 2012, and Westerling and Bryant 2008.[44]

Studies that have projected trends in area burned in California forests under climate change show no consensus. Four studies project both increases and decreases in total area burned depending on the region: Lenihan et al. 2003, Lenihan et al. 2008, Krawchuk et al. 2009, and Spracklen et al. 2009.[45] One study projected an overall decrease in area burned (McKenzie et al. 2004), while two studies projected increases (Fried et al. 2004 in a small region in the Amador-El Dorado Sierra foothills; Westerling et al. 2011).[46] The projected increases in Westerling et al. (2011) are relatively modest, with median increases in area burned of 21% and 23% by 2050, and 20% and 44% by 2085, relative to 1961-1990 under lower (B1) and higher (A2) emissions scenarios respectively. Given that the average annual burned area in California in the past several decades was many times lower than the burned area historically, these projected increases in fire activity in California would likely remain well within the historical range of the past several centuries.

As reviewed in Whitlock et al. (2015), wildfire projection studies involve numerous uncertainties, including high uncertainty around future changes in precipitation timing and amount in the western US, which create significant differences among study results. According to Whitlock et al. (2015), observed and projected changes in wildfire activity must be understood

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[44] Krawchuk, M. A., and M. A. Moritz. 2012. Fire and Climate Change in California. California Energy Commission. Publication number: CEC-500-2012-026; Moritz, M., Parisien, M., Batllori, E., Krawchuk. M., Van Dorn, J., Ganz, D., & Hayhoe, K. 2012. Climate change and disruptions to global fire activity. Ecosphere 3 (6): 1-22; Westerling, A. and B. Bryant. 2008. Climate change and wildfire in California. Climate Change 87: S231– S249.

[45] Lenihan, J.M., Drapek, R.J., Bachelet, D., and Neilson, R.P. 2003. Climate change effects on vegetation distribution, carbon, and fire in California. Ecological Applications 13: 1667-1681; Lenihan, J.M., D. Bachelet, R.P. Neilson, and R. Drapek. 2008. Response of vegetation distribution, ecosystem productivity, and fire to climate change scenarios for California. Climate Change 87(Suppl. 1): S215-S230; Krawchuk, M.A., M.A. Moritz, M. Parisien, J. Van Dorn, K. Hayhoe. 2009. Global pyrogeography: the current and future distribution of wildfire. PloS ONE 4: e5102; Spracklen, D.V., L.J. Mickley, J.A. Logan, R.C. Hudman, R. Yevich, M.D. Flannigan, A.L. Westerling. 2009. Impacts of climate change from 2000 to 2050 on wildfire activity and carbonaceous aerosol concentrations in the western United States. Journal of Geophysical Research 114: D20301.

[46] McKenzie, D., Z. Gedalof, D.L. Peterson, and P. Mote. 2004. Climatic change, wildfire, and conservation. Conservation Biology 18: 890-902; Fried, J. S., M. S. Torn, and E. Mills. 2004. The impact of climate change on wildfire severity: A regional forecast for northern California. Climatic Change 64 (1–2):169–191; Westerling, A.L., B. P. Bryant, H.K. Preisler, T.P. Holmes, H.G. Hidalgo, T. Das. And S.R. Shrestha. 2011. Climate change and growth scenarios for California wildfire. Climatic Change 109 (Suppl 1): S445-S463.

in terms of (1) fire's ecological benefits, (2) the current fire deficit in most forested regions of North America, and (3) a sufficiently long baseline to capture the historical range of fire variability within the particular ecosystem. Detecting and interpreting the significance of climate-driven fire patterns requires information on the magnitude and direction of change in comparison to the long-term fire occurrence within the ecosystem as well as the relative influences of climatic and non-climatic drivers that affect fire activity (i.e., invasion of nonnative plants, introduction of nonnative grazers, land-use change, and changes in forest management practices).[47]

F. Bark beetle outbreaks have not increased annual area burned or fire severity.

Substantial field-based evidence demonstrates that bark beetle outbreaks have not increased annual area burned in the western United States, beetle outbreaks do not contribute to severe fires, and outbreak areas do not burn more severely when fire does occur (Bond et al. 2009, Black et al. 2013, Harvey et al. 2013, Hart et al. 2015a, Hart et al. 2015b, DellaSala 2016).[48] Furthermore, scientific studies indicate that thinning and logging have no effect during beetle outbreaks of landscape scales, and that post-fire logging can reduce forest resilience to natural disturbances such as fire (DellaSala 2016).[49]

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[47] Whitlock, C., D.A. DellaSala, S. Wolf, and C.T. Hanson. 2015. Climate Change: Uncertainties, Shifting Baselines, and Fire Management. Pp. 265-289 in The Ecological Importance of Mixed Severity Fires: Nature's Phoenix. D.A. DellaSala and C.T. Hanson, eds. Elsevier, Amsterdam, Netherlands.
[48] Bond, M.L., D.E. Lee, C.M. Bradley, and C.T. Hanson. 2009. Influence of pre-fire tree mortality on fire severity in conifer forests of the San Bernardino Mountains, California. The Open Forest Science Journal 2: 41-47; Black, S.H., D. Kulakowski, B.R. Noon, and D.A. DellaSala. 2013. Do bark beetle outbreaks increase wildfire risks in the Central U.S. Rocky Mountains: Implications from Recent Research. Nat. Areas J. 33: 59-65; Harvey, B.J, D.C. Donato, W.H. Romme, and M.G. Turner. 2013. Influence of recent bark beetle outbreak on fire severity and postfire tree regeneration in montane Douglas-fir forests. Ecology 94: 2475–2486; Hart, S.J., T. Schoennagel, T.T. Veblen, and T.B. Chapman. 2015a. Area burned in the western United States is unaffected by recent mountain pine beetle outbreaks. PNAS 112: 4375-4380; Hart, S.J., T.T. Veblen, N. Mietkiewicz, and D. Kulakowski. 2015b. Negative feedbacks on bark beetle outbreaks: widespread and severe spruce beetle infestation restricts subsequent infestation. PLoS ONE 10(5): e0127975; DellaSala, D.A. 2016. Do mountain pine beetle outbreaks increase the risk of high-severity fires in western forests? A summary of recent field studies. Geos Institute.
[49] DellaSala, D.A. 2016.

G. Trees killed by drought and beetles do not increase fire intensity or extent.

The DEIR refers to the Governor's Proclamation of a State of Emergency on Tree Mortality, which addresses drought and beetle-related tree mortality in the state, as evidence that California's forests are in a "perilous condition" and "require accelerated management." DEIR at 1-11. While the governor's declaration identifies the potential health and safety issues related to dead and dying trees directly adjacent to (i.e. within falling distance of) houses, roads, and infrastructure, this does not indicate any ecological or public safety need for forest management (i.e., logging) of forests in general. Specifically, dead trees do not pose an increased fire risk to wildland-urban interface ("WUI") communities, as is made clear in the scientific literature and recent summaries of the state of the science on this issue (Hart et al. 2015a, DellaSala 2016, Hanson et al. 2016).[50] Furthermore, ecologically healthy forests and native wildlife populations depend upon abundant snags, and California's forests still have a deficit of snags (Hanson et al. 2016).

H. Vegetation management within the defensible space immediately surrounding homes effectively protects homes from wildland fire.

Vegetation management within the defensible space in the 40 meters [about 131 feet] surrounding individual homes effectively protects homes from wildland fire, even intense fire. However, forest management beyond the defensible space is not effectively protecting homes, and is unnecessarily putting firefighters at risk by focusing on remote wildlands.

Cohen 2000: The home and its surrounding 40 meters determine home ignitability.[51]

Cohen and Stratton 2008: The vast majority of homes burned in wildland fires are burned by slow-moving, low-intensity fire, and defensible space within 100-200 feet of individual homes [reducing brush and small trees, and limbing up larger trees, while also reducing the combustibility of the home itself] effectively protects homes from fires, even when they are more intense.[52]

Gibbons et al. 2012: Defensible space work within 40 meters [about 131 feet] of individual homes effectively protects homes from wildland fire, even intense fire. The authors concluded that the current management practice of thinning broad zones in wildland areas

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[50] Hanson, C.T., D.A. DellaSala, M. Bond, G. Wuerthner, D. Odion, and D. Lee. 2016. Scientists Letter to Governor Brown on the Governor's Proclamation of a State of Emergency on Tree Mortality. 4 February 2016.
[51] Cohen, J.D. 2000. Preventing disaster: home ignitability in the Wildland-Urban Interface. Journal of Forestry 98: 15-21.
[52] Cohen, J.D., and R.D. Stratton. 2008. Home destruction examination: Grass Valley Fire. U.S. Forest Service Technical Paper R5-TP-026b.

hundreds, or thousands, of meters away from homes is ineffective and diverts resources away from actual home protection, which must be focused immediately adjacent to individual structures in order to protect them.[53]

Scott et al. 2016: This study investigated the degree to which fuel management practices on USFS land can reduce wildfire exposure to human communities on a landscape encompassing the Sierra National Forest in California. The study found that treating defensible space near homes was by far the most efficient at reducing WUI exposure, including exposure transmitted from USFS lands. Treating USFS land did little to reduce overall WUI exposure across the landscape.[54]

VI. Key Objectives of the VTP Are Not Based On Substantial Evidence

The DEIR fails to present substantial evidence to support key objectives of the VTP. The VTP's first objective to "[m]odify wildland fire behavior to help reduce losses to life, property, and natural resources" is the "governing goal of the Program." DEIR at E-3. This objective is based on the "primary assumption… that vegetation treatments can affect wildland fire behavior through the manipulation of wildland fuels." DEIR at 2-7. However, the DEIR itself acknowledges that this assumption is highly uncertain, thus undermining the basis for the entire program. For example, the DEIR states that "existing modeling literature suggests that relatively large proportions of the landscape needs to be treated to achieve wildfire risk reduction at the landscape scale" but then admits that the VTP will not be treating large portions of the landscape (e.g., "the proposed annual acres of treatment may not affect all the potential landscape fuels," DEIR at 2-7). The DEIR also states that "there is not a direct correlation between implementation of a vegetation treatment project and a proportionate reduction in numbers of fires or acres burned" (DEIR at 4-430) and that the "VTP is not proposed as the solution to California's vegetation management and fire problem" (DEIR at 2-36). Furthermore, the DEIR briefly acknowledges the need for frequent follow-up "maintenance" of areas receiving fuel treatments in order for treatments to remain effective (DEIR at 4-75), but fails to analyze how maintenance will be incorporated into the Program nor the environmental impacts of repeat treatments.

Even more fundamentally, the DEIR fails to provide substantial evidence to support its governing assumption that fuel treatment activities will be effective in reducing wildfire activity. The body of studies on fuel reduction treatments indicates that the potential for fuel

[53] Gibbons, P. et al. 2012. Land management practices associated with house loss in wildfires. PLoS ONE 7: e29212.
[54] Scott, J.H., M.P. Thompson, and J.W. Gilbertson-Day. 2016. Examining alternative fuel management strategies and the relative contribution of National Forest System land to wildfire risk to adjacent homes – A pilot assessment on the Sierra National Forest, California, USA. Forest Ecology and Management 362: 29-37.

treatments to reduce wildfire occurrence is highly uncertain.[55] Research indicates that larger fires are driven by hot, dry, windy weather conditions, with forest fuel conditions playing a relatively unimportant role in determining fire behavior and intensity.[56] Furthermore, research in western US forests indicates that there is a low probability that an area that has received a vegetation treatment will overlap with a moderate or high-severity fire, further limiting the presumed efficacy of the VTP.[57]

The DEIR similarly provides no support for the assumption underlying objective 3 that "decreasing fire size will have a resulting decrease on overall fire suppression costs." DEIR at 2-8. In fact, the DEIR cites a study (Gude et al. 2013) indicating that fire proximity to homes is a significant driver of suppression costs. The DEIR also acknowledges that there is no evidence showing that fuel treatments reduce fire damage in the WUI, defined in the DEIR as the area starting beyond the defensible space to 1.5 miles from a structure. DEIR at 2-8 ("there is a lack of quantifying data to directly relate treatment methods to a reduction in damage and costs relative to the WUI"). As detailed above (Section V.H., *supra*), the best-available science indicates that vegetation management within the defensible space in the 40 meters surrounding individual homes effectively protects homes from wildland fire, while forest management in the WUI beyond the defensible space does not effectively protect homes.

VII. The DEIR Fails to Adequately Disclose, Analyze, Assess the Significance of, and Propose Mitigation for Impacts to Biological Resources Caused by the Program

The DEIR's disclosure, analysis, and mitigation of impacts to biological resources from the implementation of the VTP are cursory, incomplete, and inadequate. Specifically, the DEIR completely fails to disclose, analyze, and assess the significance of several key impacts that would result from the Program; acknowledges but fails to analyze wide-ranging impacts to special-status species, sensitive habitat areas, and migratory corridors; is inconsistent with the best-available science; fails to identify any clear and consistent baseline against which the Program's impacts to biological resources can be evaluated; and improperly defers mitigation to the project level analysis. Due to all of these failures and omissions, the DEIR's discussion of impacts to biological resources fails to satisfy CEQA's fundamental requirements.

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[55] E.D. Reinhardt, et al., *Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States*, 256 FOREST ECOLOGY & MGMT. 1997 (2008).
[56] Id.; see also J.M. Lydersen, M.P. North, and B.M. Collins, *Severity of an uncharacteristically large wildfire, the Rim Fire, in forests with relatively restored fire regimes*, 328 FOREST ECOLOGY & MGMT. 326 (2014); T. Schoennagel, et al., *The interaction of fire, fuels, and climate across Rocky Mountain Forests*, 54 BIOSCIENCE 661 (2004); E.A. Johnson, *Towards a sounder fire ecology*, 1 FRONTIERS IN ECOLOGY & THE ENVT. 271 (2003).
[57] J.J. Rhodes and W.L. Baker, *Fire probability, fuel treatment effectiveness and ecological tradeoffs in western U.S. public forests*, 1 OPEN FOREST SCIENCE JOURNAL 1 (2008).

First, the DEIR completely fails to disclose, analyze, or assess the significance of impacts resulting from the Program's efforts to reduce wildfire activity in California ecosystems, including high-severity fire activity. As discussed in detail above (Part V.A, *supra*), overwhelming scientific evidence demonstrates that California forests are adapted to mixed-severity fire regimes, including significant amounts of high-severity fire that create critical habitat diversity and are necessary for the persistence of numerous animal and plant species. The Program's fundamental goal to reduce wildfire activity threatens California forest ecosystems which are already experiencing a significant fire deficit in comparison to historical conditions (Part V.B, *supra*). Nor does the DEIR adequately acknowledge the detrimental effects on wildlife species and habitat of removing dead trees (whether killed by fire, drought, or beetles) from the forest. The DEIR must acknowledge and analyze the findings of numerous studies, detailed above, that demonstrate that reduction in wildfire activity and fuel reduction activities threaten the health, resilience, and diversity of California ecosystems and species. Instead, the DEIR simply substitutes this required analysis with a conclusory and unsupported statement that high-severity wildfire (a natural component of most California ecosystems) is detrimental to wildlife: "each of the various treatment types proposed in this program come with potential negative direct and/or indirect effects on wildlife, one must weigh these effects against the known effects on wildlife from catastrophic high severity wildfire." DEIR at 4-117. Such unsupported, conclusory statements are not permitted under CEQA. Such statements also represent an impermissible attempt to balance adverse environmental effects against purported project benefits without making the specific findings required by law. "CEQA does not authorize an agency to proceed with a project that will have significant, unmitigated effects on the environment, based simply on a weighing of those effects against the project's benefits, unless the measures necessary to mitigate those effects are truly infeasible." *City of Marina v. Bd. of Trs. of Cal. State Univ.*, 39 Cal. 4th 341, 368-69 (2006); *see also* Pub. Res. Code § 21081(a)(3), (b).

Second, the DEIR fails to adequately analyze the adverse impacts of the VTP's treatment activities on biological resources. The DEIR states that over 300 special status wildlife taxa occur in habitats likely to be treated under the VTP. DEIR at 4-118. The DEIR repeatedly acknowledges that VTP's fuel reduction treatments are likely to have adverse effects on a wide variety of species: "direct effects to special status wildlife taxa due to fuel reduction treatments are inherently adverse and will not vary much between bioregions" and "some potential exists for substantial adverse effects [from fuel reduction treatments]" (DEIR at 4-121); "the potential for substantial adverse effects from prescribed fire are most likely to occur in the conifer woodland, hardwood woodland, herbaceous, and shrub habitat types due to problems with invasive species, impacts to regeneration, burn intensity, canopy removal and burn frequency" (DEIR at 4-128); "in summary, mechanical activities have the potential for significant effects in all lifeforms since there is no comparable natural disturbance to which individual plants or communities have adapted over time, and because of the high level of disturbance to canopy cover and the soil layer" (DEIR at 4-139).

However the DEIR completely fails to discuss and analyze the adverse impacts of the VTP on specific special-status species and sensitive habitats. To serve as an adequate informational document, the DEIR must analyze how the Program will impact special-status species, including California's forest-dependent special-status species such as the state and/or federally listed northern spotted owl, Sierra Nevada red fox, marbled murrelet, American wolverine, Pacific fisher, and the fire-dependent black-backed woodpecker[58] (under consideration for federal listing), and riparian and aquatic special status species such as the Sierra Nevada yellow-legged frog, mountain yellow-legged frog, Yosemite toad, Siskiyou Mountains salamander, and numerous listed salmon and steelhead species. Forest thinning has been found to degrade and eliminate habitat for numerous rare and imperiled wildlife species, and this must be disclosed and analyzed in the DEIR. For example, adverse effects have been found with regard to spotted owls (Gallagher 2010),[59] Pacific fishers (Garner 2013),[60] black-backed woodpeckers (Hutto 2008),[61] and olive-sided flycatchers (Robertson and Hutto 2007).[62] The need for species-specific analysis is affirmed by the DEIR itself which states that effects of the VTP will be species-specific and are thus difficult to generalize. DEIR at 4-116 ("Effects of fuel reduction on wildlife depend on the specific ecological requirements of individual species and thus are difficult to generalize, especially in a treatment area as large and complex as that considered here"). The DEIR must also analyze impacts to sensitive habitat areas, wildlife movement corridors, and consistency with conservation plans.

Third, the DEIR's thresholds of significance for biological resources are impermissibly lenient and sometimes contradictory. Under CEQA Guidelines § 15065(a)(1), a lead agency *must* find that a project will have a significant effect on the environment if the project has the potential to do any of the following:

- Reduce substantially the habitat of a fish or wildlife species;
- Cause a fish or wildlife population to drop below self-sustaining levels;
- Threaten to eliminate a plant or animal community; or

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[58] For example, thinning and post-fire clear-cutting are shown to have detrimental effects on the fire-dependent black-backed woodpecker by reducing post-fire habitat. *See* Odion, D.C. and C.T. Hanson, *Projecting Impacts of Fire Management on a Biodiversity Indicator in the Sierra Nevada and Cascades, USA: The Black-Backed Woodpecker*, 6 THE OPEN FOREST SCIENCE JOURNAL 14 (2013).
[59] Gallagher, C.V. 2010. Spotted owl home range and foraging patterns following fuels-reduction treatments in the northern Sierra Nevada, California. M.S. thesis, Univ. of Calif., Davis.
[60] Garner, J.D. 2013. Selection of disturbed habitat by fishers (*Martes pennanti*) in the Sierra National Forest. M.S. thesis, Humboldt State University.
[61] Hutto, R. L. 2008. The ecological importance of severe wildfires: Some like it hot. Ecological Applications 18: 1827–1834.
[62] Robertson, B.A. and R.L. Hutto. 2007. Is selectively harvested forests and ecological trap for olive-sided flycatchers? The Condor 109: 109-121.

• Reduce substantially the number or restrict the range of an endangered, rare, or threatened species.

The DEIR improperly avoids these standards by imposing thresholds that are impermissibly lenient under CEQA and likely to miss significant impacts. In *Endangered Habitats League, Inc. v County of Orange*, 131 Cal. App. 4th 777, 793 (2005), the court held that the EIR's standard of significance for impacts on biological resources was "impermissibly lenient" because it was narrower than the standards in 14 Cal. Code Regs. §15065(a)(1). The DEIR here makes the same error. For example, the DEIR requires that the "contribution to a substantial long-term reduction in the viability of any native species or subspecies" must occur "at the state level" to be significant. DEIR at 4-115 (emphasis added). Analyzing thresholds at the state level is likely to obscure significant impacts that might happen at smaller geographical scales. The DEIR itself asserts that detecting significant impacts at the bioregional level is virtually impossible: "in order for an effect to be considered significant at the bioregional level, the species in question would have to be impacted enough to meet one of the Significance Criteria stated above. The amount of habitat that would have to be adversely modified to cause a substantial adverse effect has not been scientifically determined for most species and is likely unknowable until the threshold has been crossed and the species is in jeopardy." DEIR at 4-121. The natural conclusion is that detecting impacts at the larger state level is even more infeasible.

The significance standards for biological resources are also contradictory at times. For example, CEQA Guidelines require that adverse effects must be considered and mitigated for "any species identified as a candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by CDFW or USFWS." DEIR at 4-114. However, the DEIR limits the scope of analysis to consider adverse effects as "significant" only if they would affect taxa that are listed as either threatened or endangered at the federal or state level. DEIR at 4-118.

Fourth, the DEIR fails to identify any clear and consistent baseline against which the Program's impacts to biological resources can be evaluated. The DEIR contains a brief, general discussion of the environmental and regulatory setting for the Program, but it does not contain any of the information about existing physical conditions necessary to evaluate the Program's biological impacts. *See, e.g.*, *Save Our Peninsula Comm. v. Monterey Cty. Bd. of Supervisors*, 87 Cal. App. 4th 99, 119 (2001) ("Without a determination and description of the existing physical conditions on the property at the start of the environmental review process, the EIR cannot provide a meaningful assessment of the environmental impacts of the proposed project.").

VIII. The DEIR Fails to Meet CEQA's Requirements with Regard to the Analysis of Greenhouse Gas ("GHG") Emissions

The DEIR fails to meet CEQA's requirements with regard to the analysis of greenhouse gas ("GHG") emissions. First, it fails to include reasonably foreseeable indirect impacts of vegetation treatment. Second, the DEIR adopts an invalid threshold for significance. Third, the analysis of impacts under GHG "Impact 2" is fatally flawed.

A. The DEIR fails to analyze indirect greenhouse gas impacts from Cal Fire's Vegetation Treatment Program.

The DEIR stops short of the full analysis of impacts required under CEQA because it considers only short-term direct emissions of greenhouse gases ("GHGs"). CEQA requires disclosure and analysis of "direct physical changes in the environment and reasonably foreseeable indirect physical changes which may be caused by the project." CEQA Guidelines § 15064(d). Furthermore, an EIR must take into account both long-term and short term impacts, "giving due consideration to both short-term and long-term effects." CEQA Guidelines § 15126.2; see also Pub. Resources Code §21083; CEQA Guidelines § 15065(a)(2). This DEIR fails to consider either indirect effects or long-term impacts, resulting in a deficient impacts analysis.

Greenhouse gas emissions from bioenergy projects should have been considered as an indirect impact of the project. The DEIR notes that up to 10 percent of biomass from mechanical treatments might be removed to fuel biomass plants.[63] DEIR at 4-65. Yet, the DEIR contains no evaluation of the impact of emissions from that biomass when it is combusted for energy. This is important because combustion of wood for energy instantaneously releases virtually all of the carbon in the wood to the atmosphere as CO_2. Burning wood for energy is typically less efficient, and thus far more carbon-intensive per unit of energy produced, than burning fossil fuels. Measured at the stack, biomass combustion produces significantly more CO_2 per megawatt-hour than fossil fuel combustion; a large biomass-fueled boiler may have an emissions rate far in excess of 3,000 lbs CO_2 per MWh.[64] Smaller-scale facilities using gasification technology are

[63] The EIR provides no analysis, justification, or evidence to support the assumption that 10 percent of biomass from mechanical treatments could be removed to biomass plants. Absent a reasoned explanation and evidentiary support for this figure, Cal Fire's conclusions lack a legally adequate basis.

[64] The Central Power and Lime facility in Florida, for example, is a former coal-fired facility recently permitted to convert to a 70-80 MW biomass-fueled power plant. According to permit application materials, the converted facility would consume the equivalent of 11,381,200 MMBtu of wood fuel per year. *See* Golder Assoc., Air Construction Permit Application: Florida Crushed Stone Company Brooksville South Cement Plant's Steam Electric Generating Plant, Hernando County Table 4-1 (Sept. 2011). Using the default emissions factor of 93.8 kg/MMBtu CO_2 found in 40 C.F.R. Part 98, and conservatively assuming both 8,760 hours per year of operation and electrical output at the maximum 80 MW nameplate capacity, the facility would produce about 3,350 lbs/MWh CO_2. If the plant were to produce only 70 MW of electricity, the CO_2 emissions rate would exceed 3,800 lbs/MWh. If such a facility were dispatched to replace

similarly carbon-intensive; the Cabin Creek bioenergy project recently approved by Placer County would have an emissions rate of more than 3,300 lbs CO_2/MWh.[65] By way of comparison, California's 2012 baseline emissions rate from fossil-fuel electric power generation was 954 lbs CO_2 per MWh.[66] As one recent scientific article noted, "[t]he fact that combustion of biomass generally generates more CO_2 emissions to produce a unit of energy than the combustion of fossil fuels increases the difficulty of achieving the goal of reducing GHG emissions by using woody biomass in the short term."[67] Put more directly, replacing California grid electricity with biomass electricity likely more than *triples* smokestack CO_2 emissions.

Even if net carbon cycle effects are taken into account, emissions from biomass power plants can increase atmospheric CO_2 concentrations for decades to centuries depending on feedstocks, biomass harvest practices, and other factors. Multiple studies have shown that it can take a very long time to discharge the "carbon debt" associated with bioenergy production, even where fossil fuel displacement is assumed, and even where "waste" materials like timber harvest residuals are used for fuel.[68] One study, using realistic assumptions about initially increased and

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one MWh of fossil-fuel fired generation with one MWh of biomass generation, the facility's elevated emissions rate would also result in proportionately higher emissions on a mass basis.

[65] Ascent Environmental, Cabin Creek Biomass Facility Project Draft Environmental Impact Report, App. D (July 27, 2012) (describing 2 MW gasification plant with estimated combustion emissions of 26,526 tonnes CO_2e/yr and generating 17,520 MWh/yr of electricity, resulting in an emissions rate of 3,338 lbs CO2e/MWh).

[66] See Energy and Environment Daily, Clean Power Plan Hub, at http://www.eenews.net/interactive/clean_power_plan/states/california (visited May 18, 2016).

[67] David Neil Bird, et al., *Zero, one, or in between: evaluation of alternative national and entity-level accounting for bioenergy*, 4 GLOBAL CHANGE BIOLOGY BIOENERGY 576, 584 (2012), doi:10.1111/j.1757-1707.2011.01137.x.

[68] *See, e.g.*, Stephen R. Mitchell, et al., *Carbon Debt and Carbon Sequestration Parity in Forest Bioenergy Production*, GLOBAL CHANGE BIOLOGY BIOENERGY (2012) ("Mitchell 2012"), doi: 10.1111/j.1757-1707.2012.01173.x (attached); Ernst-Detlef Schulze, et al., *Large-scale Bioenergy from Additional Harvest of Forest Biomass is Neither Sustainable nor Greenhouse Gas Neutral*, GLOBAL CHANGE BIOLOGY BIOENERGY (2012), doi: 10.1111/j.1757-1707.2012.01169.x at 1-2 (attached); Jon McKechnie, et al., *Forest Bioenergy or Forest Carbon? Assessing Trade-Offs in Greenhouse Gas Mitigation with Wood-Based Fuels*, 45 ENVIRON. SCI. TECHNOL. 789 (2011) (attached); Anna Repo, et al., *Indirect Carbon Dioxide Emissions from Producing Bioenergy from Forest Harvest Residues*, GLOBAL CHANGE BIOLOGY BIOENERGY (2010) ("Repo 2010"), doi: 10.1111/j.1757-1707.2010.01065.x (attached); John Gunn, et al., Manomet Center for Conservation Sciences, Massachusetts Biomass Sustainability and Carbon Policy Study (2010), *available at* https://www.manomet.org/sites/manomet.org/files/Manomet_Biomass_Report_Full_LoRez.pdf (visited May 24, 2016).

subsequently repeated bioenergy harvests of woody biomass, concluded that the resulting atmospheric emissions increase may even be permanent.[69]

Another indirect source of emissions from the project is the loss of forest carbon. The DEIR avoids analysis of forest carbon loss through an impermissible constriction of the timescale of analysis. The DEIR acknowledges that impacts could be considered on multiple timescales from annual to decadal. DEIR at 4-424. It elects, however, to consider only annual emissions from equipment and combustion. This violates CEQA's requirement that long-term impacts be considered as well. In both the short- and long-term, vegetation treatment will remove biomass. The loss of this biomass significantly reduces stored carbon and thus equates to carbon emissions. One recent study concluded, for this and other reasons, that thinning operations tend to remove about three times as much carbon from the forest as would be avoided in wildfire emissions.[70] Another report from Oregon found that thinning operations resulted in a net loss of forest carbon stocks for up to 50 years.[71] Another published study found that even light-touch thinning operations in several Oregon and California forest ecosystems incurred carbon debts lasting longer than 20 years.[72] Other recent studies have shown that intensive harvest of logging residues that otherwise would be left to decompose on site can deplete soil nutrients and retard forest regrowth as well as reduce soil carbon sequestration.[73]

The DEIR also appears to misinterpret the benefits of prescribed burns relative to wildfires when it indicates that prescribed fires reduce greenhouse gas emissions. The EIR states that because the flaming phase is most efficient, it creates minimal emissions, while the smoldering phase causes greater emissions. DEIR at 4-421, 4-379. The DEIR then concludes that because prescribed burns are more efficient, they emit less greenhouse gases. DEIR at 4-421. While this may be true for criteria air pollutants, the exact opposite is true for CO_2 emissions. Combustion efficiency is a measure of how much carbon is released as CO_2 as opposed to other carbon forms; the greatest efficiency is associated with the largest fraction of CO_2. Therefore, the

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[69] Bjart Holtsmark, *The Outcome Is in the Assumptions: Analyzing the Effects on Atmospheric CO_2 Levels of Increased Use of Bioenergy From Forest Biomass*, GLOBAL CHANGE BIOLOGY BIOENERGY (2012), doi: 10.1111/gcbb.12015.
[70] John L. Campbell, et al., *Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions?* FRONT. ECOL. ENV'T (2011), doi:10.1890/110057.
[71] Joshua Clark, et al., *Impacts of Thinning on Carbon Stores in the PNW: A Plot Level Analysis*, Final Report (Ore. State Univ. College of Forestry May 25, 2011).
[72] Tara Hudiburg, et al., *Regional carbon dioxide implications of forest bioenergy production*, 1 NATURE CLIMATE CHANGE 419 (2011), doi:10.1038/NCLIMATE1264.
[73] David L. Achat, et al., *Forest soil carbon is threatened by intensive biomass harvesting*, SCIENTIFIC REPORTS 5:15991 (2015), doi:10.1038/srep15991; D.L. Achat, et al., *Quantifying consequences of removing harvesting residues on forest soils and tree growth – A meta-analysis*, 348 FOREST ECOLOGY & MGMT. 124 (2015).

DEIR is factually incorrect in its assertion that increased combustion efficiency associated with prescribed burning translates to reduced greenhouse gas emissions.

B. The selected threshold for significance of "Impact 1" is irrational and violates CEQA.

In its analysis of GHG "Impact 1" the DEIR compares the annual direct greenhouse gas emissions from vegetation treatment to the CO_2 emissions that might occur if an area the same size as the project burned in a wildfire. This choice of significance threshold is invalid because (1) it weighs environmental effects against the objective of the project; (2) it incorrectly assumes that vegetation treatment of an area equates to prevention of wildfire in that location; and (3) it impermissibly and without justification compares the project's emissions to a hypothetical "wildfire" scenario rather than to a baseline derived from existing environmental conditions.

First, the comparison violates CEQA by using the benefit sought to be achieved as the threshold. "CEQA does not authorize an agency to proceed with a project that will have significant, unmitigated effects on the environment, based simply on a weighing of those effects against the project's benefits, unless the measures necessary to mitigate those effects are truly infeasible." *City of Marina v. Bd. of Trs. of Cal. State Univ.*, 39 Cal. 4th 341, 368-69 (2006). The DEIR acknowledges that prescribed burn, construction-related, and livestock greenhouse gas emissions[74] will occur due to increased forest management activities under the VTP. DEIR at 4-422. But these emissions are compared against the potential emissions from prevented wildfire, the precise objective of the project. DEIR at 2-6. The DEIR's attempt to dismiss the proposed VTP's adverse effects by weighing them against its purported benefits is legally improper absent full and formal compliance with the findings requirements of Public Resources Code section 21081.

Second, the DEIR fails to provide substantial evidence that vegetation treatment actually prevents fire, which is a fundamental assumption inherent in the selected threshold. The DEIR consistently indicates that potential reductions in wildfire size or severity are uncertain and

[74] We note that methane from enteric fermentation is the primary greenhouse gas emitted by the livestock in question. In order to compare these to other project emissions, the EIR uses an extremely inaccurate value for methane global warming potential ("GWP"). The value used by the EIR is 21 (EIR at 4-420), but this is outdated. The most recent IPCC Fifth Assessment Report assigns a value of 34 to biogenic methane over 100 years and a value of 86 over 20 years. At a minimum an updated 100-year GWP must be adopted. See G. Myhre et al., *Anthropogenic and Natural Radiative Forcing*, in CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS. CONTRIBUTION OF WORKING GROUP I TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE IPCC Table 8.7 at 714 (Cambridge Univ. Press 2013). Furthermore, we urge Cal Fire to adopt a 20-year GWP as the California Air Resources Board has for its recent greenhouse gas analyses.

unpredictable: "while there is not a direct correlation between implementation of a vegetation treatment plan and proportionate reduction in numbers of fires or acres burned, … it would likely result in some reduction." DEIR at 4-430; *see also* DEIR at 4-423 (cannot predict, but "reasonable to assume"). This is largely because it is impossible to know in advance where fires will occur, and thus impossible to target only the areas likely to burn for treatment.[75] Viewed most optimistically, the data in the DEIR suggest that treatment at best may produce a reduction in burn severity. DEIR at 4-423, 424. Furthermore, the DEIR ignores the body of literature that finds no relation. For instance, a recent study by Syphard et al. (2012) found that Cal Fire's hazard analysis fails as a predictor of wildfire.[76] Price et al. (2015) found no relationship between area burned and previous fire for the Sequoia-Kings Canyon area.[77] Other studies have found that vegetation treatment in remote areas is ineffective.[78] Even if vegetation treatment were positively associated with lower fire severity, there remains extreme uncertainty that vegetation treatment of an area can even influence wildfire behavior in that particular location.

Third, by comparing project emissions to emissions that would occur if a similar area burned in a wildfire, the DEIR relies on an impermissible baseline. CEQA requires that environmental impacts be assessed against existing physical conditions rather than hypothetical or merely legally conceivable scenarios. *See, e.g.*, CEQA Guidelines § 15125(a); *Communities for a Better Env't v. S. Coast Air Quality Mgmt. Dist.*, 48 Cal. 4th 310, 319, 322 (2010); *Save Our Peninsula Comm. v. Monterey Cty. Bd. of Supervisors*, 87 Cal. App. 4th 99 (2001). As discussed above, there is no possible way Cal Fire can carry out vegetation treatments in only the areas that will burn in a wildfire. As one recent study put it, "[a]ny approach to [carbon] accounting that assumes a wildfire burn probability of 100% during the effective life span of a fuel-reduction treatment is almost certain to overestimate the ability of such treatments to reduce pyrogenic emissions on the future landscape."[79] As a result, the DEIR's assessment of GHG

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[75] See generally Campbell 2011, *supra* note 70 at 4 (noting that "[a]mong fire-prone forests of the western US, the combination of wildfire starts and suppression efforts result in current burn probabilities of less that 1%," and reviewing literature finding that only 3% of the area treated is likely to be exposed to fire during an effective treatment lifespan of 20 years).

[76] Syphard, A.D., J.E. Keeley, A.B. Massada, T.J. Brennan, and V.C. Radeloff. 2012. Housing arrangement and location determine the likelihood of housing loss due to wildfire. PLoS ONE 7: e33954 at 4 (doi: 10.1371/journal.pone.0033954).

[77] Price, O.F., J.G. Pausas, N. Govender, M.D. Flannigan, P.M. Fernandes, M.L. Brooks, and R.B. Bird G. 2015. Global patterns in fire leverage: the response of annual area burnt to previous fire. International Journal of Wildland Fire 24(3): 297-306.

[78] Keeley, J.E, H. Safford, C.J. Fotheringham, J. Franklin, and M. Moritz 2009. The 2007 Southern California wildfires: lessons in complexity. Journal of Forestry September: 287-296; Syphard, A.D., J.E. Keeley, and T.J. Brennan. 2011. Comparing fuel breaks across southern California national forests. Forest Ecology and Management 261: 2038-2048.

[79] Campbell 2011, *supra* note 70 at 4.

emissions rests on an inherently misleading and legally impermissible baseline and is also unsupported by substantial evidence.

Finally, it should be noted that the annual predicted volume of emissions from the proposed VTP would be significant based on objective measures. The DEIR estimates that the project would result in 298,745 metric tons of CO_2e each year. DEIR at 4-427. This is equivalent to 62,894 passenger cars or the electricity use in 41,098 homes[80] – not an insignificant source of emissions. For comparison, the South Coast Air Quality Management District has established a GHG threshold of 10,000 MT CO_2e per year.[81] The Bay Area Air Quality Management District established thresholds of 10,000 MT CO_2e per year for stationary sources and 1,100 MT CO_2e per year for non-stationary sources,[82] although these thresholds are currently not in place due to pending review at the California Supreme Court.[83] The DEIR also makes the mistake of minimizing GHG impacts by comparing the project's emissions to national and state inventories. This is not a valid basis of comparison. As the California Supreme Court recently noted, the global nature of climate change means that any one project is unlikely to appear significant, but rather the question is one of incremental effects that are cumulatively significant. *Center for Biological Diversity v. Dept. Fish and Wildlife*, 62 Cal. 4th 204, 219 (2015).

C. Analysis under GHG "Impact 2" is confusing and unsupported by substantial evidence.

The DEIR's GHG "Impact 2" titled "Impacts of climate change on VTP projects: increase in vulnerability of lands in Cal Fire's responsibility area" is confusing and appears to be attempting several different analyses at once. To the best we can discern, the DEIR is claiming that climate change will increase the incidence of wildfire, and vegetation treatment will mitigate the purported climate-related fire hazard. But then the same impact analysis also seems to consider whether the VTP complies with state climate goals. Both portions of the analysis are invalid and inadequate under CEQA. Furthermore, this confusing juxtaposition of analyses violates CEQA's requirement that information be clearly presented in order to adequately inform the reader. Kostka & Zischke, Practice Under the California Environmental Quality Act § 11.20 (CEB 2016 supp.).

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[80] Converted using EPA's Greenhouse Gas Equivalencies Calculator, available at https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.
[81] See http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.
[82] See http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_May%202011_5_3_11.ashx.
[83] See http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_May%202011_5_3_11.ashx.

1. The DEIR fails to provide substantial evidence for increased wildfire with climate change.

The DEIR purports to analyze whether the VTP will increase vulnerability to climate-induced wildfire. In so doing, it focuses on the assumption that climate change will increase wildfire without providing substantial evidence for that assertion. First, as detailed above (Part V.E., *supra*), the evidence is weak to non-existent that climate change increases fire hazard. Second, a number of the studies cited in the DEIR related to climate impacts on wildfire are inapposite. For instance, the DEIR cites to Randerson et al. (2006) for the proposition that frequency and intensity of wildland fires may result from altered weather, precipitation and temperatures. DEIR at 4-431. But Randerson et al. did not assess climate impacts on wildfire; instead, the study examined the impact of boreal fire on climate change at high northern latitudes. The DEIR implies that climate impacts somehow relate to increased exposure of people and homes to wildfire at the urban interface areas. *Id.* But the study by Syphard et al. (2007) that is cited for this proposition actually states that "while climate change may have played some role in our observed change in area burned, we cannot extend those results to our analysis because we included fires of all sizes under multiple land ownership classes, and historical fire patterns in the lower elevations do not correspond to patterns [in other studies]."[84] The analysis by Syphard et al. in fact provided an insightful examination of how human activity at the urban interface can increase fire risk and does not address climate change. In short, the DEIR has ignored a large body of data regarding climate change impacts on wildfire and has failed to provide substantial evidence for a number of its assertions related to climate change impacts.

2. The DEIR fails to adequately consider potential conflict with State GHG goals.

As noted in the DEIR, one of the significance criteria for greenhouse gases under Appendix G of the CEQA Guidelines is whether the project would "conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases." Yet, the DEIR ignores the potential conflict between losses of forest carbon from vegetation treatment and state climate goals, asserting without analysis that the VTP is necessary and sufficient to protect forest carbon goals.

Increased removals of carbon from forests and increased operational CO_2 emissions over the next 10 years will likely conflict with science-driven greenhouse gas reduction goals established in the 2008 Scoping Plan, the 2014 Scoping Plan update, Executive Order B-30-15,

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[84] Syphard, A.D.et al. 2007. Human Influence on California Fire Regimes. Ecological Applications 17: 1388-1402 at 1399.

and Executive Order S-3-05.[85] As discussed in detail above, the removal of excess biomass will result in a net loss of forest carbon and the use of forest materials for bioenergy generation can increase atmospheric CO_2 concentrations for a period of decades to centuries depending on the feedstocks involved. The DEIR fails to address whether foreseeable increases in CO_2 emissions as a result of VTP over the next several decades conflict with science and state policy requiring CO_2 emissions to decrease sharply over that same period. *See Center for Biological Diversity v. California Dept. of Fish & Wildlife*, 62 Cal. 4th 204, 223 & n.6.

The DEIR must compare how this project's impacts both in the form of direct GHG emissions and in the form of lost carbon storage relate to the deep carbon reductions that climate science as reflected in state policy indicates are necessary. In particular, the 2014 Scoping Plan Update states that "California forests must be managed to ensure that they provide net carbon storage even in the face of increased threats from wildfire, pests, disease, and conversion pressures." Scoping Plan Update at 72. Furthermore, Executive Order S-3-05 set a statewide greenhouse gas emissions reduction target of 1990 levels by 2020, and Executive Order B-30-15 set the greenhouse gas target of 40% below 1990 levels by 2030. And while none of these referenced plans set a specific numerical target for forest carbon, removals of carbon from forests and resulting CO_2 emissions need to be evaluated in light of these targets and cannot be ignored.

The DEIR asserts that vegetation treatment has been implemented in part under grants made possible in part by ARB's cap-and-trade program to mitigate impacts of climate change and reduce risks of catastrophic wildfire. But as noted above, the DEIR has ignored evidence that such treatment is ineffective for protecting forest carbon stores. Thus, the DEIR has not adequately analyzed potential conflict with state goals to reduce greenhouse gas emissions.

IX. Conclusion

In sum, the DEIR fails to comply with CEQA and the CEQA Guidelines. Cal Fire cannot approve the VTP on the basis of this DEIR. Rather, Cal Fire must revise both the DEIR and the VTP to comply with the requirements of law and to reflect the physical and ecological realities of California's forests.

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[85] *See* CAL. AIR RES. BD., FIRST UPDATE TO THE CLIMATE CHANGE SCOPING PLAN: BUILDING ON THE FRAMEWORK 33-34 (2014), *available at* http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm (visited May 20, 2016); CAL. AIR RES. BD., CLIMATE CHANGE SCOPING PLAN: A FRAMEWORK FOR CHANGE 117-21 (December 2008), *available at* http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm (visited May 20, 2016).

Sincerely,

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Attachments: References Cited (uploaded in PDF format)

References Cited (all references uploaded in pdf format)

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The City of SAN DIEGO
Planning Department

March 1, 2019

Edith Hannigan
Land Use Planning Program Manager
California Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

Subject: **CITY OF SAN DIEGO COMMENTS ON THE NOTICE OF PREPARATION OF A DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT FOR THE CALIFORNIA VEGETATION TREATMENT PROGRAM**

Dear Ms. Hannigan:

The City of San Diego ("City") Planning Department has received the Notice of Preparation (NOP) prepared by the California Board of Forestry and Fire Protection ("Board") and distributed it to applicable City departments for review. The City, as a Responsible Agency under CEQA, has reviewed the NOP and appreciates this opportunity to provide comments to the Board. Continued coordination between the City and the Board will be essential. In response to this request for public comments, the City has the following comments on the NOP for your consideration.

TRANSPORTATION AND STORM WATER DEPARTMENT, STORM WATER DIVISION, Mark Stephens, Associate Planner – MGStephens@sandiego.gov, 858-541-4361

In reviewing this Notice of Preparation (NOP), the City Storm Water Division focused on potential impacts associated with hydrology and water quality, and the storm water drainage system. The NOP states (on page 4) that the Environmental Impact Report (EIR) will address all environmental topic areas identified in Appendix G of State California Environmental Quality Act (CEQA) Guidelines, and appropriately includes Hydrology and Water Quality among the list of topic areas.

- The Statewide coverage of "Treatable Landscape" as depicted in Figure 1 of the NOP makes it difficult to determine at this scale whether locations within the City of San Diego are included directly, but the City has wildland-urban interface (WUI) areas, and much of the City is located downstream from treatable landscape areas shown.
- While recognizing that Program EIR analysis will be at a relatively general level, please assure the scope includes preventing erosion and siltation from vegetation removal that could adversely affect downstream waters.

- Please also address:

    - Impacts that could be associated with application of herbicides,

    - Potential effects on downstream flows, drainage facilities, and flooding,

    - Potential effects if heavy equipment is used to remove vegetation, and

    - Potential downstream effects of herbivore grazing programs.

Thank you for the opportunity to provide comments on the draft PEIR. Please feel free to contact Rebecca Malone, Senior Planner, directly via email at RMalone@sandiego.gov or by phone at 619-446-5371 if there are any questions regarding the contents of this letter or if the Board would like to meet with City staff to further discuss our comments.

Sincerely,

Heidi Vonblum, Program Manager
Planning Department

RM/jm

cc: Reviewing Departments (via email)
Review and Comment online file

City of Santa Barbara

Fire Department

www.SantaBarbaraCA.gov

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121 W. Carillo St.
Santa Barbara, CA
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February 28, 2019

Matt Dias, Executive Officer
Edith Hannigan, Land Use Planning Program Manager
Board of Forestry & Fire Protection
Via email to: CalVTP@bof.ca.gov

Mr. Dias and Ms. Hannigan,

Re: Comments on California Vegetation Treatment Program and NOP for Program EIR

I am responding to the request for comments on the proposed Program EIR for the California Vegetation Treatment program, as part of the joint effort by City Planning, Fire, and other local divisions involved in wildland mitigation. The City of Santa Barbara Fire Department and Community Development Department appreciate the opportunity to comment on the scope of analysis for the Program Environmental Impact Report (PEIR) on the California Vegetation Treatment Program (CalVTP).

The City is potentially a Responsible Agency for the CalVTP and PEIR. Future vegetation treatment activities permitted and undertaken within the City's Local Responsibility Area (LRA) may likely implement CalVTP provisions. The Program EIR may potentially be used in streamlining CEQA review for future vegetation treatment activities permitted and undertaken within the City, such as through finding such implementing activities within the scope of analysis of the Program EIR, tiering off the Program EIR, or incorporating by reference analysis from the Program EIR in other local CEQA documents.

The City is also pursuing update of its existing 2004 Community Wildfire Protection Plan (CWPP) and Program EIR in the areas of: updated hazard and community risk assessment; vegetation treatment projects and collaborative efforts with other jurisdictions; wildland/urban interface policies; Fire and Building code requirements addressing structure vulnerability; evacuation planning; wildland pre-plan provisions to increase firefighter and public safety; engine response and suppression capability; and post-fire recovery planning.

Comments regarding the CalVTP and Program EIR Scope of Analysis:

- *Regional Recommendations:* CalVTP vegetation treatment guidelines and any PEIR mitigation recommendations will be most useful if they are specific to local areas and ecosystems.
- *Policy Analysis:* The PEIR impact analysis of each environmental issue needs to be considered in accordance with State CEQA Guidelines15124 and 15125 and Appendix G.X provisions for EIRs to identify related environmental regulations and policies, address any inconsistencies between the project and applicable plans and policies, and recognize impacts associated with inconsistencies with plans, policies or regulations of agencies with jurisdiction over the project and which were adopted for the purposes of avoiding or mitigating environmental impacts.

  It will be important going forward with the adoption of stronger vegetation treatment activities toward reducing wildfire hazards and impacts that any conflicts be addressed and resolved with other State environmental legislative and administrative policies and regulations, as well as with federal and local policies. Examples may include:

- Provisions for vegetation treatment along creeks to improve fire safety, and regulations by State and Federal resource agencies and Coastal Commission, including areas of existing streambed alteration permits
- Prescribed burns, and air quality policies and regulations;
- Vegetation treatments, and greenhouse gas directives for reducing climate change;
- Any recommended policies for limiting development within urban/wildland interface to improve fire safety, and State policies for housing development.

Thank you for the opportunity to comment. If you have questions please contact me at JPoire@SantaBarbaraCA.gov 805 564-5701 or City environmental analyst Barbara Shelton of the Community Development Department at bshelton@santabarbaraca.gov 805 564 5470 X4467.

Sincerely,

Joe Poiré

Joseph J. Poiré, Fire Marshal
Santa Barbara City Fire Department
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HOUSING AND
COMMUNITY DEVELOPMENT
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809 Center Street • Room 206 • Santa Cruz, CA 95060 • www.cityofsantacruz.com
LEE BUTLER, DIRECTOR OF PLANNING AND COMMUNITY DEVELOPMENT

March 1, 2019

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Land Use Planning Program Manager
PO Box 944246
Sacramento, CA 94244-2460

RE: City of Santa Cruz Comments for Notice of Preparation for California Vegetation Treatment Program (CalVTP)

Dear Edith:

The City of Santa Cruz appreciates the opportunity to review the Notice of Preparation for the California Vegetation Treatment Program. We encourage the California Board of Forestry and Fire Protection to consider the responses below during development of the project's Draft Environmental Impact Report (DEIR). The following comments are grouped as responses from various city departments.

Planning
General Plan 2030 includes two policies that encourage cooperation between the City and the California Department of Forestry and Fire Protection (CAL FIRE). Policy CD1.4.4 directs the City to work with local and state fire agencies to maintain and update urban wildland interface zones that preserve the character of the natural environment while providing wildland fire safety. Policy HZ1.4.5 calls for the City to operate cooperative fire protection services with CAL FIRE. We encourage the DEIR to consider collaboration with the City of Santa Cruz when developing work plans near city limits. You can find a copy of General Plan 2030 here: http://www.cityofsantacruz.com/home/showdocument?id=71130

While the CAL FIRE State Responsibility Area (SRA) does not include any land within the Santa Cruz city limits, SRA land does overlap with portions of the city's Sphere of Influence, including the area west of Graham Hill Road, Henry Cowell State Park, unincorporated county area on the northern portion of the UCSC campus, Wilder Ranch State Park, and coastal agricultural land to the west of city limits and east of Wilder Ranch State Park. These areas include several mapped sensitive resource areas under General Plan 2030.

All parts of this overlapping Sphere of Influence and SRA area are mapped as sensitive or highly sensitive for archaeological resources. We encourage the DEIR to address the potential for impacting archaeological resources in this area.

The City-Wide Creeks and Wetlands Management Plan includes three creeks within this overlapping area: San Lorenzo River Upper (West Bank and East Bank), Moore Creek Reach 3, and Moore Creek

Reach 4. The DEIR should evaluate any impacts to these streams and consider the management standards and guidelines in the City-Wide Creeks and Wetlands Management Plan with regard to vegetation treatments in these areas. The City-Wide Creeks and Wetlands Management Plan is available here: http://www.cityofsantacruz.com/government/city-departments/planning-and-community-development/area-plans-planning-documents-projects/city-wide-creeks-and-wetlands-management-plan.

Finally, the overlapping SRA and Sphere of Influence area includes areas mapped under General Plan 2030 as having a potential for liquefaction. These areas include Lombardi Gulch north of Highway 1, the lower part of the Paradise Park neighborhood between Highway 9 and Ocean Street Extension, the land adjacent to both sides of Branciforte Creek west and north of DeLaveaga Park, and the land adjacent to Arana Gulch east and north of DeLaveaga Park. The DEIR should evaluate vegetation treatment within these areas with regard to potential impacts relating to liquefaction.

The State Responsibility Area is directly adjacent to much of the northern and western Santa Cruz city limits, and activities in these areas could therefore result in impacts within the city limits. The DEIR should address potential impacts to these areas, including but not limited to impacts from herbicide application, controlled burns, and vegetation removal on water supply, stormwater runoff, water quality, air quality, and sensitive or protected habitats and species. Sensitive habitats mapped in General Plan 2030 on areas adjacent to the SRA area include Coastal Prairie and Annual Grassland habitat. The DEIR for General Plan 2030 lists several sensitive or protected plant and animal species that are potentially present in areas within city limits adjacent to the SRA. These species and potential locations are shown in the following table:

Species	**Location**
Santa Cruz Manzanita	Pogonip, DeLaveaga Park
robust spineflower	Pogonip
Santa Cruz tarplant	DeLaveaga Park
Gairdner's yampah	Pogonip
San Francisco popcornflower	Moore Creek Preserve, Pogonip
Santa Cruz clover	Pogonip
Ohlone tiger beetle	Pogonip, Moore Creek Preserve, private parcels near Moore Creek Preserve and Meder Street
Coho Salmon	San Lorenzo River
Steelhead	Carbonera Creek, Branciforte Creek, Arana Gulch, San Lorenzo River
Tidewater Goby	Moore Creek, San Lorenzo River
California red-legged frog	Moore Creek
Southwestern pond turtle	Moore Creek, Pogonip, San Lorenzo River
Double-crested Cormorant	San Lorenzo River
Black-crowned Night Heron	Branciforte Creek
Sharp-shinned hawk	Meder Canyon, Pogonip
Cooper's hawk	Moore Creek, Pogonip, DeLaveaga Park
Golden eagle	Pogonip, Rincon Gorge
White-tailed kite	Pogonip
Merlin	Meder Canyon
Long-eared owl	Pogonip
Burrowing Owl	Pogonip, Moore Creek, Private parcels adjacent to Moore Creek
Loggerhead shrike	Pogonip, Moore Creek, Private parcels adjacent to Moore Creek
California Horned Lark	Pogonip, Moore Creek, Private parcels adjacent to Moore Creek
Oak Titmouse	San Lorenzo River north of Highway 1

Yellow warbler	Arana Gulch, Moore Creek Preserve, Carbonera Creek, Branciforte Creek, San Lorenzo River
Hermit Warbler	Pogonip
Yellow-breasted chat	San Lorenzo River
Chipping Sparrow	Moore Creek, Pogonip
Grasshopper Sparrow	Moore Creek, Pogonip
Townsend's western big-eared bat	Undeveloped lands and open spaces
Pallid bat	Undeveloped lands and open spaces
Western red bat	Arana Gulch, undeveloped lands and open spaces
Fringed myotis	Undeveloped land and open spaces
Long-legged myotis	Undeveloped land and open spaces
San Francisco dusky-footed woodrat	Undeveloped land and open spaces
American Badger	Undeveloped land and open spaces

Fire

The Fire Department does not have any SRA in our jurisdiction and therefore has no comments other than to express support for the proposed program.

City Urban Forester

The SRA is adjacent to areas within city limits identified as Wildland Urban Interface or mapped as a Fire Hazard Area under General Plan 2030. The DEIR should address how the scope of work adjacent to these areas will be developed, mapped, and shared with local jurisdiction staff to promote collaborative efforts and incorporate local input. All vegetation management efforts adjacent to these areas should be consistent with local regulations including the city's Wildland Urban Interface policy (see chapter 5 of the City of Santa Cruz Local Hazard Mitigation Plan: (http://www.cityofsantacruz.com/home/showdocument?id=74331), the Heritage Tree Ordinance (https://www.codepublishing.com/CA/SantaCruz/?SantaCruz09/SantaCruz0956.html#9.56.010), and the Integrated Pest Management policy (http://www.cityofsantacruz.com/home/showdocument?id=5970). No additional brush, debris, or fuel load should be left on city property consistent with current forestry practices. Restoration projects performed on city property should be coordinated with appropriate city staff, and there should be a one-year maintenance period. All erosion best management practices should be in place post treatments and monitored by the state for a one-year period. No work should consequently impact city staff or city budgets, and press releases and public outreach should occur early on in the process and at the expense of the state.

Please contact me at (831) 420-5247 or cstanger@cityofsantacruz.com if you have any questions.

Sincerely,

Clara Stanger

Clara Stanger
Associate Planner II

cc: Lee Butler, Planning Director
Alex Khoury, Assistant Planning Director
Sarah Fleming, Principal Planner
Eric Marlatt, Principal Planner
Jason Hajduk, Fire Chief
Robert Young, Interim Fire Marshal
Leslie Keedy, City Urban Forester

County of San Diego

MARK WARDLAW
DIRECTOR

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KATHLEEN A. FLANNERY
ASSISTANT DIRECTOR

March 1, 2019

Edith Hannigan, Land Use Planning Program Manager
California Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

Via e-mail to: CalVTP@bof.ca.gov

REQUEST FOR COMMENTS ON THE CALIFORNIA VEGETATION TREATMENT PROGRAM FOR THE CALIFORNIA BOARD OF FORESTRY AND FIRE PROTECTION

Dear Ms. Hannigan,

The County of San Diego (County) reviewed the California Board of Forestry and Fire Protection's (Board) Notice of Preparation Program Environmental Impact Report (PEIR) California Vegetation Treatment (CalVTP), received on January 31, 2019.

The County appreciates the opportunity to review the Project and offers the following comments for your consideration. Please note that none of these comments should be construed as County support for this Project.

DEPARTMENT OF ENVIRONMENTAL HEALTH

The County's Department of Environmental Health Local Enforcement Agency (LEA) is certified by the California Department of Resources Recycling and Recovery to enforce State laws and regulations of solid waste activities throughout the unincorporated County pursuant to Public Resources Code (PRC) and Titles 14 and 27 of the California Code of Regulations (CCR).

According to the proposed Notice of Preparation of a PEIR for the proposed CalVTP, the implementation of vegetation treatments to reduce wildfire risks include Wildland-Urban Interface (WUI) fuel reduction, fuel breaks, and ecological restoration projects. As a potential responsible agency under the Statewide CalVTP, the LEA has the following comments:

1. It is unknown the type of treatment or processing that the vegetation would receive in the three proposed treatment categories. The organic (green) waste generated as a result of these treatments would still be considered feedstock for organic processing operations such as composting. Organic processing operations are subject to permitting and inspection by the LEA. Additionally, organic processing operations are subject to solid waste regulatory standards including pathogen reduction, metals and physical contaminants sampling. However, these solid waste standards do not include any

chemicals of concern that would be part of a treatment that includes herbicides or flame retardants.

2. Please note that organic waste generated from the proposed treatments must be properly managed, processed, or disposed, and handled in accordance with Title 14, California Code of Regulations, Chapter 3.1 – Handling of Compostable Materials. Please include a description and analysis for proposed management of generated organic materials from these treatments.

3. Please identify how infected vegetation such as trees infested with bark beetle will be managed/processed to prevent further spread of this pest or other pests.

4. Please include the County of San Diego Solid Waste Local Enforcement Agency on the interested parties list for future updates on this proposed PEIR.

County of San Diego
Solid Waste Local Enforcement Agency
5500 Overland Avenue, Suite 110
San Diego, CA 92123

PARKS AND RECREATION

The Department of Parks and Recreation (DPR) recognizes the Project has the goal of reducing the potential for wildfires; however:

1. Please ensure that the CalVTP coordinates closely with local jurisdictions and land managers to ensure that all potential vegetation treatment methods are covered under the California Environmental Quality Act (CEQA) document.

The County appreciates the opportunity to comment on this Project. We look forward to receiving future documents related to this Project and providing additional assistance, at your request. If you have any questions regarding these comments, please contact Timothy Vertino, Land Use / Environmental Planner, at (858) 495-5468, or via e-mail at timothy.vertino@sdcounty.ca.gov.

Sincerely,

Eric Lardy, AICP
Chief (Acting), Advance Planning Division
Planning & Development Services

E-mail cc: Victor Avina, Policy Advisor, Board of Supervisors, District 1
Adam Wilson, Policy Advisor, Board of Supervisors, District 2
Jason Paguio, Policy Advisor, Board of Supervisors, District 3
Gabe Gutierrez, Policy Advisor, Board of Supervisors, District 4
Benjamin Mills, Policy Advisor, Board of Supervisors, District 5
Lara Barrett, CAO Staff Officer, LUEG
Mary Bennett, Administrative Analyst, DEH
Emmet Aquino, Park Project Manager, DPR

County Of Santa Barbara

Mona Miyasato
County Executive Officer

105 East Anapamu Street
Room 406
Santa Barbara, California 93101
805-568-3400 • Fax 805-568-3414
www.countyofsb.org

Executive Office

Assistant County Executive Officers
Jeff Frapwell
Bernard Melekian
Terri Nisich
Matt Pontes

Deputy County Executive Officer
Dennis Bozanich

March 1, 2019

Edith Hannigan
Land Use Planning Program Manager
California Baord of Forestry and Fire Protection
PO Box 944246
Sacramento, CA 94244

Email: CalVTP@bof.ca.gov

RE: Notice of Preparation of a Programmatic EIR for the California Vegetation Treatment Program

Dear Ms. Hannigan:

Thank you for the opportunity to comment on the Notice of Preparation for the California Vegetation Treatment Programmatic Environmental Impact Report. At this time, the County submits comments from the Planning and Development Department and Fire Department.

If you should have further questions, please do not hesitate to contact my office directly, or Rob Hazard, Deputy Fire Marshal, at (805) 681-5568 or (805) 681-5523, or Dianne Black, Planning Director, at (805) 568-2086.

Sincerely,

Dennis Bozanich
Deputy County Executive Officer

cc: Dianne Black, Planning Director, Santa Barbara County Planning and Development Department
Rob Hazard, Deputy Fire Marshal, Santa Barbara County Fire Department

Enclosure: Santa Barbara County Planning and Development Letter, Dated February 26, 2019
Santa Barbara County Fire Department Letter, dated February 25, 2019

Fire Department

"Serving the community since 1926"

HEADQUARTERS

4410 Cathedral Oaks Road
Santa Barbara, CA 93110-1042
(805) 681-5500 FAX: (805) 681-5563

Mark A. Hartwig
Fire Chief
County Fire Warden

Rob Heckman
Deputy Fire Chief

February 25, 2019

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Land Use Planning Program Manager
Mail: PO Box 944246
Sacramento, CA 94244-2460

Dear Ms. Hannigan,

SUBJECT: Notice of Preparation/ California Vegetation Treatment Program PEIR

Santa Barbara County Fire Department (SBC Fire) has reviewed the above referenced Notice of Preparation. SBC Fire supports the goals of the proposed CalVTP and agrees that it could be an effective tool to address fuels management both state-wide and in Santa Barbara County. SBC Fire has an active fuels management program that reflects the fuel treatment types outlined in the NOP- (1) WUI treatments, (2) strategic fuel breaks, and (3) prescribed fire. SBC Fire staff utilize the aging Vegetation Management Program (VMP) PEIR for prescribed fire projects, and individual CEQA analysis for WUI and fuel break treatments. The proposed CalVTP would improve our ability to provide consistent, accurate, and quality CEQA review for future projects.

Santa Barbara County has experienced an intense decade of wildland fire. Past fuels management activities have proven instrumental in limiting structure loss, increasing firefighter and public safety, and improving fire control objectives. Community defensible space (WUI) treatments in the Santa Barbara front country foothills were utilized during the 2018 Thomas Fire to successfully protect thousands of structures. Strategic fuel breaks have been used to support critical backfiring operations on multiple incidents including the 2007 Zaca Fire, the 2008 Gap Fire, The 2009 La Brea Fire, the 2017 Whittier Fire, and the 2018 Thomas Fire. Additionally, recent fires have demonstrated the value of vegetation age-class reduction, both from prescribed fire and wildfire, in providing large landscape-scale areas that limit fire spread. Chaparral fuel beds in Santa Barbara County have shown remarkable fire resistance in sub 20 year age class. Given the above described wildfire impacts SBC Fire supports the expanded scope of the proposed CalVTP PEIR.

Santa Barbara County represents the transition from Southern to Central California, and as such contains unique vegetation alliances. Our local weather patterns are also distinct. To adequately support fuel treatment strategies specific to our unique area the Draft CalVTP should address these local conditions, particularly the impact of previous fires limiting subsequent fire spread. Prescribed fire in sage and grass/oak woodland vegetation alliances should be included in the scope of the proposed PEIR, as well as the impact of traditional herbivory, particularly when combined with range improvement prescribed fire. The efficacy of our local strategic fuel breaks, demonstrated in recent large fires, should also be incorporated into the EIR.

Santa Barbara County Fire supports the Board of Forestry in the continued effort to craft a comprehensive plan to reduce wildland fire risk statewide. The proposed CalVTP PEIR as outlined in the NOP could be a powerful tool for local agencies engaged in fuel reduction activities.

As always, if you have any questions or require further information, please call 681-5568 or 681-5523.

In the interest of life and fire safety,

Robert Hazard
Deputy Fire Marshal
Santa Barbara County Fire Department

County of Santa Barbara
Planning and Development
Dianne M. Black, Director
Steve Mason, Assistant Director

February 25, 2019

Edith Hannigan
Land Use Planning Program Manager
Board of Forestry and Fire Protection
PO Box 944246
Sacramento, CA 94244-2460
CalVTP@bof.ca.gov

Re: Notice of Preparation of a Program Environmental Impact Report for the California Vegetation Treatment Program

Dear Ms. Hannigan:

The County of Santa Barbara Planning and Development Department reviewed the Notice of Preparation (NOP) for the California Vegetation Treatment Program Programmatic Environmental Impact Report (PEIR) and appreciates the opportunity to provide the comments listed below.

1. Vegetation Treatment Types

The NOP provides a list of potential treatment types, including prescribed fire, manual activities, mechanical activities, prescribed herbivory, and targeted ground application of herbicides. These treatments have the effect of either introducing fire with greater frequency, or providing some of its desired effects, such as thinning vegetation that serves as a fuel. Because much of the proposed project area is covered in forested lands, it appears the proposed treatment activities are primarily aimed at forested lands in which fire suppression has resulted in a buildup of fuels that would otherwise be cleared by more frequent understory fires. There has been considerable scientific support in much of California and the western United States for the concept of "re-introducing fire" in forested ecosystems where overly aggressive fire suppression tactics in frequent fire ecosystems have produced significant alterations in fire regimes, including higher severity fires and increased fire size.

However, in many parts of Santa Barbara County, there is no evidence to support the concept of too much fire suppression leading to "fuels build-up" such that fire should be re-introduced[1,2].

[1] Keeley, J. E., Fotheringham, C. J., & Morais, M. (1999). Reexamining fire suppression impacts on brushland fire regimes. Science, 284(5421), 1829-1832.

Large fires in Santa Barbara County have typically occurred when extreme wind events align with existing ignitions, and the fundamental shift in recent decades has been towards increased human ignitions, not a change in fuels associated with fire suppression[3]. In addition, prescribed burn for fuel hazard reduction in Santa Barbara County is logistically difficult because of topography, climatic conditions, and proximity of wildlands to existing communities and outlying development. As a result, it is imperative that the fuel treatment strategies applied in Santa Barbara County are tailored to the characteristics of the vegetation communities that occur, the spatial distribution of our developed communities, and the physical and climactic conditions that drive wildfire behavior.

2. Specificity of Impact Analysis

Chaparral and coastal sage scrub ecosystems cover much of Santa Barbara County's State Responsibility Areas and have different natural fire frequency regimes and contain different fuels composition than much of the State's forested lands. As a result, the fuels management activities covered under the PEIR should account for those differences and should avoid a generalized approach to the evaluation of impacts and mitigation for practices that pertain more to forested lands. The PEIR should evaluate impacts and mitigation of fuel treatment activities in each vegetation community separately in order to account for the differences in ecosystem characteristics, including fire frequency, evolutionary adaptation, and management of fire. The PEIR impact analysis should also take into account the proposed vegetation treatment impacts to chaparral and coastal sage scrub communities and their ability to continue to provide high quality habitat and the likelihood of long-term damage or type conversion.

3. Future Notices

When they become available, please send a copy of the following notices to Dan Klemann, Deputy Director of Long Range Planning, via email at dklemann@countyofsb.org or mail at 123 E. Anapamu Street, Santa Barbara, CA 93101: Draft PEIR Notice of Completion; all notices of hearings regarding the project; and Final PEIR Notice of Determination.

Thank you for the opportunity to provide comments on the NOP. If you have any questions or require further information, please contact me at (805) 568-2086 or Mr. Klemann at (805) 568-2072.

Regards,

Dianne M. Black

Dianne M. Black, Director

---

[2] Keeley, J. E., Fotheringham, C. J., & Moritz, M. A. (2004). Lessons from the October 2003 Wildfires in Southern California. Journal of Forestry, 102(7), 26-31.

[3] Moritz, M. A. (1997). Analyzing extreme disturbance events: fire in Los Padres National Forest. Ecological Applications, 7(4), 1252-1262.

Planning & Development Department

cc:

Dan Klemann, Deputy Director, Long Range Planning Division
Whitney Wilkinson, Senior Planner, Planning and Development Department
File

County of Santa Clara

Parks and Recreation Department

298 Garden Hill Drive
Los Gatos, California 95032-7669
(408) 355-2200 FAX (408) 355-2290
Reservations (408) 355-2201
www.parkhere.org

February 28, 2019

Edith Hannigan, Board Analyst
Board of Forestry and Fire Protection
VTP Draft PEIR Comments
PO Box 944246
Sacramento, CA 94244-2460

SUBJECT: **Notice of Preparation of a Draft Program Environmental Impact Report for the Proposed Statewide Vegetation Treatment Program**

Dear Ms. Hannigan,

The County of Santa Clara, Parks and Recreation Department ("County Parks Department"), has reviewed the Notice of Preparation for a Draft Program Environmental Impact Report (EIR) for the Proposed Statewide Vegetation Treatment Program.

Under the Recreation Section, G.2 Data and Assumptions, a summary of recreational use by land management category includes state and regional parks. The County of Santa Clara Parks and Recreation Department, a regional parks system of 28 parks, is not mentioned in this section of the Draft Program EIR. Table G.2-1 should include the County of Santa Clara Parks and Recreation Department in the list of public outdoor recreation providers. We request that the County of Santa Clara Parks and Recreation Department be included in the Draft Program EIR and included in the project scope as a treatable recreational area in the proposed program.

Thank you for the opportunity to comment on the EIR for the Proposed Statewide Vegetation Treatment Program. The County Parks Department requests a copy of the Draft Program EIR once it is released for public review. If you have questions related to these comments, please call me at (408) 355-2230 or e-mail me at kimberly.brosseau@prk.sccgov.org.

Sincerely,

Kimberly Brosseau, AICP
Senior Planner

cc: Michael Rhoades, Natural Resource Program Manager II

CALIFORNIA STATE UNIVERSITY, SAN BERNARDINO
Office of the President

February 27, 2019

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Land Use Planning Program Manager
PO Box 944246
Sacramento, CA 94244-260

Dear Ms. Hannigan,

California State University, San Bernardino (CSUSB) appreciates the opportunity to provide comments in response to the proposed California Vegetation Treatment Program (CalVTP). The University would like the opportunity to participate and provide consultation with the California Board of Forestry and Fire Protection as a lead agency. The proposed program will likely affect the native chaparral and hills immediately adjacent to the University, which are also used for scholarly activities. According to the notice, treatment activities may include prescribed fire, manual activities, prescribed herbivory (beneficial grazing), and applications of herbicides.

After general review, there are two areas of concern for the University with respect to the proposed program. The first concern is that the campus community is particularly sensitive to the use and application of herbicides for the control of plant material on and around the grounds of the University. The University respectfully requests advance notification and careful coordination with CAL Fire or any other agency at any time herbicides are proposed to be used to reduce vegetation on any adjacent lands to the main campus. This will assist the University with proper advance notification to the community, as well as prepare for any concerns or questions that may arise during the course of pesticide spray.

A second concern is that the native chaparral ecosystem immediately surrounding the University is a vital part of the educational curriculum for our students, as well as a research opportunity for our faculty. Again, the University requests advance notification of any plans to reduce vegetation near the campus. This will assist the University with the opportunity to ensure that research and instruction will not be disrupted.

CSUSB applauds and appreciates the actions the Board is taking to reduce the risk of wildfires in and around our area. We look forward to future opportunities to collaborate and partner with you.

909.537.5002 • fax: 909.537.5901 • www.csusb.edu/president
5500 UNIVERSITY PARKWAY, SAN BERNARDINO, CA 92407-2393

For any questions or to coordinate activities with CSUSB, please contact Douglas Freer, Vice President for Administration and Finance, at dfreer@csusb.edu or 909/537-7130.

Sincerely,

Tomás D. Morales
President

Cc: Douglas Freer, Vice President for Administration and Finance
Shari McMahan, Provost and Vice President for Academic Affairs
Nina Jamsen, Chief of Police and Director of Public Safety
Jennifer Sorenson, Associate Vice President for Facilities Planning and Management

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Director's Office
P.O. Box 944209
Sacramento, CA 94244-2090
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

February 25, 2019

Edith Hannigan
Land Use Planning Program Manager
California Board of Forestry and Fire Protection
PO Box 944246
Sacramento, CA 94244-2460

Dear Ms. Hannigan:

Notice of Preparation, Draft Programmatic Environmental Impact Report for California Board of Forestry and Fire Protection California Vegetation Treatment Program

Thank you for the opportunity to provide comments in response to the California Board of Forestry and Fire Protection's (Board) January 30, 2019, Notice of Preparation (NOP) for the California Vegetation Treatment Program (CalVTP) Draft Programmatic Environmental Impact Report (PEIR). As described, the Draft PEIR will address potentially significant environmental effects expected with Board approval and implementation of the proposed CalVTP. The CalVTP will implement vegetation treatments statewide to reduce wildfire risks and avoid or diminish harmful effects of wildfire on the people, property, and natural resources in the State of California, and is consistent with Executive Order B-52-18, issued by former Governor Brown on May 10, 2018. The California Department of Fish and Wildlife (CDFW) appreciates the critical importance of the CalVTP and the Board's related efforts in reducing wildfire risks, and we thank the Board for coordinating with and seeking input from CDFW in this process.

The CDFW offers the comments below specifically and our assistance to the Board generally as the state agency with jurisdiction by law over the conservation, protection, and management of fish, wildlife, and habitat necessary for biologically sustainable populations of those species throughout California. (Fish & G. Code, § 1802.) The CDFW offers its comments and assistance, in turn, as California's statutorily designated trustee agency for fish and wildlife, whereby CDFW holds these resources in trust for all the people of the State. (Fish & G. Code, §§ 711.7, subd. (a), 1802; Pub. Resources Code, § 21070; Cal. Code Regs., tit. 14, § 15386, subd. (a).) Finally, CDFW offers its comments and assistance to the Board as a regulatory and permitting authority under the California Endangered Species Act, Native Plant Protection Act, Natural Community Conservation Planning Act, and other provisions of Fish and Game Code that are key to the conservation and protection of California's fish and wildlife resources.

As described in the NOP, CDFW expects the exercise of its regulatory and permitting authority will be a necessary part of the Board and the California Department of Forestry and Fire Protection's implementation of the CalVTP. (See also Pub. Resources Code, § 21069; Cal. Code Regs., tit. 14, § 15381.)

Per the NOP, the PEIR will build on the previous Draft PEIR released for public review in 2017 and will stand as a new statewide, first-tier, programmatic environmental analysis to serve as a platform for subsequent, second-tier, environmental analysis for individual projects implementing the CalVTP. Development and inclusion of a robust, programmatic approach in the CalVTP to avoid, reduce, and mitigate significant impacts to fish and wildlife is key to CDFW's ability in relying on the PEIR as a responsible agency under CEQA for our own future permitting obligations. The CDFW looks forward to working with the Board to develop a comprehensive, programmatic approach to mitigation that will substantially lessen the potential for significant adverse effects to fish and wildlife.

The CDFW notes, consistent with the NOP, that the Board has not prepared an Initial Study under CEQA, electing instead to analyze the entire spectrum of potential environmental effects in the Draft PEIR. In reviewing the Draft PEIR as a responsible and trustee agency, CDFW will look for a robust discussion of the environmental setting and baseline; identified thresholds of significance; a detailed, programmatic analysis of all potentially significant direct, reasonably foreseeable indirect, and cumulative impacts of the CalVTP; and a detailed discussion of potentially feasible mitigation measures and alternatives to avoid, reduce, and substantially lessen related significant effects to the extent feasible. CDFW thanks the Board for the opportunity for early engagement in the development of the Draft PEIR. The CDFW looks forward to working collaboratively with the Board and providing specific comments regarding the range of actions, potentially feasible alternatives, mitigation measures, and significant effects.

If you have any questions, please contact CDFW Senior Environmental Scientist (Specialist) Elliot Chasin at (916) 651-7879 or elliot.chasin@wildlife.ca.gov.

Sincerely,

Valerie Termini
Acting Chief Deputy Director

ec: California Board of Forestry and Fire Protection
CalVTP@bof.ca.gov

Chad Dibble, Deputy Director
Ecosystem Conservation Division
Chad.dibble@Wildlife.ca.gov

Richard Macedo, Chief
Habitat Conservation Planning Branch
Richard.macedo@Wildlife.ca.gov

Elliot Chasin
Senior Environmental Scientist (Specialist)
Habitat Conservation Planning Branch
elliot.chasin@wildlife.ca.gov

February 20, 2019

VIA ELECTRONIC MAIL ONLY

Board of Forestry
ATTN: Edith Hannigan, Land Use Planning Program Manager
PO Box 944246
Sacramento CA 94244-2460
CalVTP@bof.ca.gov

RE: Notice of Preparation of draft PDEIR for Vegetation Treatment Program

Dear Ms. Hannigan:

Endangered Habitats League (EHL) has previously submitted detailed comments on draft PDEIRs for prior iterations of the Vegetation Treatment Program (VTP). While we incorporate all these prior comments by reference into comments for this latest Notice of Preparation, a small selection is also enclosed.

The massive fire tragedies of 2017 and 2018 in Sonoma, Paradise, Central Coast, Malibu, and elsewhere should compel the Board and CalFire to reassess policies and practices that, at a minimum, and by any objective standard, are not working as intended. In the scrub systems of chaparral and coastal sage scrub, CalFire's goal of modifying vegetation at a landscape scale distant from communities and structures has not, and will not, be effective in reducing fire hazard during the wind-driven fires that cause the vast majority of loss of life and property. Such a reassessment should refocus on a 1) "house-out" approach, recognizing the dominant role of structure flammability and wind-borne ember transmittal, and 2) curtailing the irresponsible expansion of the Wildland-Urban Interface which the NOP itself identifies as a driving factor in California's fire catastrophes.

It is discouraging the NOP does not offer evidence that the Board or CalFire is learning from experience or changing strategies, or addressing the realities of fire in a changing climate. Instead, it appears to "double down" on failed approaches. The NOP simply promises a huge increase in the scope of vegetation treatments, with the primary metric being acres treated, not fire hazard reduction. This amounts to a government program that defines its own success as the amount of tax dollars it can spend. In scrub ecosystems, the VTP promises a false sense of security for communities, and an initiation to more tragedy.

EHL once again offers collaboration on solutions, by building upon the mitigation measures contained in the prior iteration.[1] Prior to launching an effort that will likely result in litigation, cost, and delay, we once again ask the Board and CalFire to meet with fire ecologists and conservationists to find common ground. Shouldn't public agencies work in good faith with stakeholders and give collaboration a try?

Yours truly,

Dan Silver
Executive Director

---

[1] For example, by better defining the exemptions to treatment restrictions and by setting reasonable distances from communities beyond which treatments would not occur.

Hannigan, Edith@BOF

From:	Dan Silver <dsilverla@me.com>
Sent:	Wednesday, February 27, 2019 11:16 AM
To:	CALVTP@BOF; Hannigan, Edith@BOF
Subject:	Notice of Preparation of PDEIR for Vegetation Treatment Program - ADDITIONAL COMMENTS
Attachments:	Evers et al. 2018 Archetypes of Community Wildfire Exposure from National Forests of western US.pdf

February 27, 2019

VIA ELECTRONIC MAIL ONLY

Board of Forestry
ATTN: Edith Hannigan, Land Use Planning Program Manager
PO Box 944246
Sacramento CA 94244-2460
CalVTP@bof.ca.gov

RE: Notice of Preparation of draft PDEIR for Vegetation Treatment Program - ***Additional comments***

Dear Ms Hannigan:

Endangered Habitats League (EHL) has the following additional scoping comment:

The VTP PDEIR should prepare and evaluate an alternative for scrub (chaparral and coastal sage scrub) systems along the lines outlined by the authors of the enclosed scientific article (Evers et al. 2018 Archetypes of Community Wildfire Exposure from the National Forests of the Western US). For Southern California scrub systems (Archetype C2, page 60), the study concludes that vegetation treatment is a low priority action. Rather, ignition prevention, wildfire suppression, land use and zoning, and home protection are all high or highest priorities.

Confirmation of your receipt of this message and enclosure is requested and appreciated.

Sincerely,
Dan Silver

Dan Silver, Executive Director
Endangered Habitats League
8424 Santa Monica Blvd., Suite A 592
Los Angeles, CA 90069-4267

213-804-2750
dsilverla@me.com
www.ehleague.org

ENDANGERED HABITATS LEAGUE
DEDICATED TO ECOSYSTEM PROTECTION AND SUSTAINABLE LAND USE

February 20, 2019

VIA ELECTRONIC MAIL ONLY

Board of Forestry
ATTN: Edith Hannigan, Land Use Planning Program Manager
PO Box 944246
Sacramento CA 94244-2460
CalVTP@bof.ca.gov

RE: Notice of Preparation of draft PDEIR for Vegetation Treatment Program

Dear Ms. Hannigan:

Endangered Habitats League (EHL) has previously submitted detailed comments on draft PDEIRs for prior iterations of the Vegetation Treatment Program (VTP). While we incorporate all these prior comments by reference into comments for this latest Notice of Preparation, a small selection is also enclosed.

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It is discouraging the NOP does not offer evidence that the Board or CalFire is learning from experience or changing strategies, or addressing the realities of fire in a changing climate. Instead, it appears to "double down" on failed approaches. The NOP simply promises a huge increase in the scope of vegetation treatments, with the primary metric being acres treated, not fire hazard reduction. This amounts to a government program that defines its own success as the amount of tax dollars it can spend. In scrub ecosystems, the VTP promises a false sense of security for communities, and an initiation to more tragedy.

8424 SANTA MONICA BLVD SUITE A 592 LOS ANGELES CA 90069-4267 ♦ WWW.EHLEAGUE.ORG ♦ PHONE 213.804.2750

EHL once again offers collaboration on solutions, by building upon the mitigation measures contained in the prior iteration.[1] Prior to launching an effort that will likely result in litigation, cost, and delay, we once again ask the Board and CalFire to meet with fire ecologists and conservationists to find common ground. Shouldn't public agencies work in good faith with stakeholders and give collaboration a try?

Yours truly,

Dan Silver
Executive Director

---

[1] For example, by better defining the exemptions to treatment restrictions and by setting reasonable distances from communities beyond which treatments would not occur.

Hannigan, Edith@BOF

From: Dan Silver <dsilverla@me.com>
Sent: Wednesday, February 27, 2019 11:16 AM
To: CALVTP@BOF; Hannigan, Edith@BOF
Subject: Notice of Preparation of PDEIR for Vegetation Treatment Program - ADDITIONAL COMMENTS
Attachments: Evers et al. 2018 Archetypes of Community Wildfire Exposure from National Forests of western US.pdf

February 27, 2019

VIA ELECTRONIC MAIL ONLY

Board of Forestry
ATTN: Edith Hannigan, Land Use Planning Program Manager
PO Box 944246
Sacramento CA 94244-2460
CalVTP@bof.ca.gov

RE: Notice of Preparation of draft PDEIR for Vegetation Treatment Program - *Additional comments*

Dear Ms Hannigan:

Endangered Habitats League (EHL) has the following additional scoping comment:

The VTP PDEIR should prepare and evaluate an alternative for scrub (chaparral and coastal sage scrub) systems along the lines outlined by the authors of the enclosed scientific article (Evers et al. 2018 Archetypes of Community Wildfire Exposure from the National Forests of the Western US). For Southern California scrub systems (Archetype C2, page 60), the study concludes that vegetation treatment is a low priority action. Rather, ignition prevention, wildfire suppression, land use and zoning, and home protection are all high or highest priorities.

Confirmation of your receipt of this message and enclosure is requested and appreciated.

Sincerely,
Dan Silver

Dan Silver, Executive Director
Endangered Habitats League
8424 Santa Monica Blvd., Suite A 592
Los Angeles, CA 90069-4267

213-804-2750
dsilverla@me.com
www.ehleague.org

9 January, 2018

Board of Forestry and Fire Protection
ATTN: Edith Hannigan, Board Analyst
VTP Draft PEIR Comments
PO Box 944246
Sacramento, CA 94244-2460

I have reviewed much of the new VTP PEIR and am submitting comments in my capacity as a fire scientist and published author on numerous scientific studies and reviews pertaining to fire regimes, management and ecology in California.

I reviewed and commented previous versions of the VTP PEIR and am broadly familiar with its evolution over the past several years.

As with the 2013 and 2016 versions, this latest draft suffers from poor scientific documentation. In many cases citations don't support (and sometimes contradict) the statement to which they are attached. These issues render the citation invalid and casts doubt on the scientific credibility of the document. Some of these errors are documented in the attached notes. The review is not an exhaustive list of the documentation issues in the VTP PEIR but illustrates the type of shortcomings.

Other parts of the document state assumptions without any apparent effort to scientifically support them. One of the most problematic issues, from my point of view as a fire scientist, is the dogged and oft repeated assumption than treatment of wildland vegetation will always have a beneficial (reducing) affect on fire size. The document either does not cite any studies, or cites studies with limited applicability, to support this claim. Vegetation treatments can be effective in reducing fire size if 1) it is a fuel and topography (not wind) driven fire, 2) the fire intersects the treated area, and 3) suppression crews have safe access (although fires will stop on their on at fuel breaks this is uncommon) (Syphard et al, 2011).

There are a number of studies conducted in areas of California where large, very expensive fires (in terms of both suppression and asset loss) occur periodically which directly contradict the assumption that fuel treatments universally decrease fire size (e.g., Moritz 1997; Moritz et al. 2004; Keeley and Zedler 2009 and citations therein).

Fuel treatments can also have a negative impact, such as an increase on fire spread rate and fire size when fuel-bed ignitability is altered. This is potentially most critical when fires are wind-driven and rate of spread is determined by firebrands igniting receptive fuel beds far ahead of the fire front. Altering the landscape fuels in a manner that leads to a mosaic of highly flammable flash fuels (e.g. grass and herbaceous species) may increase rate of spread and endanger resources adjacent to these fuels. A configuration of intermixed fuels allows “leapfrogging” of ignitions in patches of flashy fuels which then ignite adjacent heavier fuels creating a shotgun-scatter of fire fronts that out-strips suppression resources, often within the first minutes to hours of a fire.

California has two types of fires: the ones we plan for (fuel and topography driven) and the ones that actually do the vast majority of the damage (wind and firebrand driven). As the largest and most costly fires are wind driven, the affect of fuel manipulation needs to be addressed within the wind-driven fire scenario when justifying of the VTP. It is not. Firebrands are mentioned but the potential of their interaction with treated fuel breaks under wind driven fires is not acknowledged much less addressed and weighed in the design of the plan. This impact of fuel treatments must be addressed if CalFire's goal is to reduce losses from fire rather than just increasing acres treated.

Also of concern is there assertion that fire/fuel management can be used everywhere for restoration purposes. This has only been shown convincingly for coniferous forests where fire exclusion has been effective. Fire exclusion has not been effective in at lower elevations in California. In fact, fire frequency has increased in most shrubland systems that many fire-adapted species face extirpation from too frequent of fires. Coastal sage scrub and desert shrublands are not adapted to large-scale disturbances, fire or otherwise, and are subject to invasions by non-natives following these events.

The vegetation that is the most hazardous and largely responsible for structure loss is that within 100 feet of the house. The majority of the time, this means ornamental vegetation and the debris, which is not addressed in this plan. Southern California was flammable long before urban development but since then we have increased the flammability by planting the most fire prone vegetation from around the world in our neighborhoods. By planting fire-prone species from other Mediterranean regions we magnify our risk. Common fire prone species used as ornamental plants in California include eucalyptus and acacia from Australia, rosemary, Aleppo pine and Canary Island pine from the Mediterranean of Europe, and fountain grass and ice plant from Africa. Frequently these species also acquire large biomass due to irrigation, which results in our urban areas with much greater hazardous fuel loads than the adjacent wildlands.

The VTP also fails to adequately address an important factor in mitigating large fires, which is limiting initial ignition. The majority of fires at lower elevations in California are anthropomorphic in origin and a significant number are ignited accidentally along roadways by car fires, catalytic converter failure, discarding of burning material from vehicles, etc. CalFire misses an opportunity to prevent large fires from starting by not considering the potential in this area. Isolating flammable vegetation from road shoulders either by actual manipulation of vegetation in this area or the construction of barriers such as sound walls could have a significant impact. While the latter is initially expensive it is a more permanent solution, causes fewer environmental impacts (and potentially some benefits) and requires lower future maintenance.

There is a large and growing body of literature addressing issues of firebrands and fuel beds that CalFire needs to review and discuss if the VTP PEIR is going to be considered based on current science. I list a number of studies and documents below that would offer an initial introduction to this area of research.

The authors of the VTP PEIR continue to conflate the terms fire intensity, fire severity and burn severity and they fail to include any definition for these terms in the glossary. This has been problematic and has been addressed in the literature (Keeley, 2009; Jain et al., 2004). Hazard and risk are also not defined and are used interchangeably in varying contexts.

California suppression crews and managers are some of the best in the world and frequently put their lives on the line to protect others. CalFire should respect these heroes by producing a scientifically supported plan that will ease their burden and make their work safer.

Please see detailed comments that follow.

Sincerely,

CJ Fotheringham, BA, Msc, PhD

Comments on review of 2017 version of Draft Program Environmental Impact Report for the Vegetation Treatment Program

Black Italicized are quotes from the VTP PEIR or other sources where indicated. Blue text comprises my comments.

P.1-16

The current VMP reduces the potential for large wildfires and enhances natural resources by treating the following vegetation types primarily on SRA lands where CAL FIRE is responsible for fire protection:

- *Coastal scrub habitat south of San Luis Obispo County*
- *Montane hardwood-conifer habitat north of Monterey County*
- *Mixed chaparral, montane chaparral, chamise-redshank, and valley foothill hardwood habitats throughout their range.*
- *Annual and perennial grasslands intermixed with the above vegetation types*
- *With additional CEQA review, mixed conifer forests and other timber types, such as those found in the Coast Range, Sierra Nevada, and Cascade mountains*

There is no support for the above claim that vegetation treatment in all these vegetation types will reduce potential for large fires and enhance resources.

P.2-2

The VTP must characterize the biodiversity of California in such a way that provides a tractable framework for environmental analysis at the statewide scale. To do so, the Program groups the state's vegetation communities into three major formations: tree-dominated, grass-dominated, and shrub-dominated. These major vegetation formations generally exhibit similar fire behavior and provide a basis for stratifying the state for programmatic assessment (Rothermel, 1983; Scott & Burgan, 2005; Anderson, 1982).

No, these formations don't behave similarly ecologically or in regards to fire regime. These citations document refer to fuel models which treat these systems very differently.

P.2-3

The VTP also stratifies treatments into three basic program treatment types that are defined in Section 2.2.2.2: wildland-urban interface (WUI), fuel breaks, and ecological restoration The treatment type would be selected based on the values at risk, surrounding fuel conditions, strategic necessity for fire suppression activities, and departure from natural fire regime.

As with vegetation formation statement above, the document fails specify where and when any of these treatments are effective (with the notable exception of high elevation coniferous systems). In some environments fuel treatments can lead to long term ecological degradation and habitat loss. Also not addressed are the impacts fuel treatments to fire suppression and spread on other than moderate weather conditions.Neither fuelbreaks nor ecological restoration are supported in this documents with the exception of some coniferous forests.

P.2-5

The primary assumption of the VTP is that appropriate vegetation treatments can affect wildland fire behavior through the manipulation of wildland fuels. Since human activity cannot influence weather or topography, reducing the continuity of wildland fuels would result in lower fuel hazard and more favorable fire behavior.

This fundamental assumption is not supported by any citations. In absence of some meaningful scientific support for these assumptions, the remainder of the document is meaningless.

Ten of the most destructive fires in California have occurred since 2010 (see Figure 2.2-2); through the strategic placement of WUI, fuel break, or ecological restoration treatments, subsequent activities implemented under the VTP will help to reduce losses to life, property, and natural resources.

As there were only four such fires since 2010, what is probably meant is since 2000.

Most, if not all, of the fires on this list were wind-driven, which are not controllable by pre-fire fuel manipulations. In fact, fuel breaks may exacerbate the problem by increasing rate of spread via increased ember ignition in flash fuels that populate fuel breaks after the first growing season post-treatment.

P. 2-6

Focusing vegetation treatments in the WUI is critical, because losses in the WUI are on the rise (Stephens et al., 2009) and are expected to get worse (Mann et al., 2014). This objective only relates to vegetation treatments within the WUI; influences or changes to local land use planning associated with the WUI is outside the scope of this VTP, but is part of a larger strategy being implemented by CAL FIRE and the Board (Board, 2010).

If hazardous, ornamental vegetation should also be addressed (acacia, pine, eucalyptus, etc.).

P.2-7

Strategically placed vegetation treatments can offer a more effective means of perimeter control.

The VTP PEIR does not provide scientific support for this statement. Such treatments,certainly don’t help, and in the wind driven fires that do the most damage, may exacerbate problems.

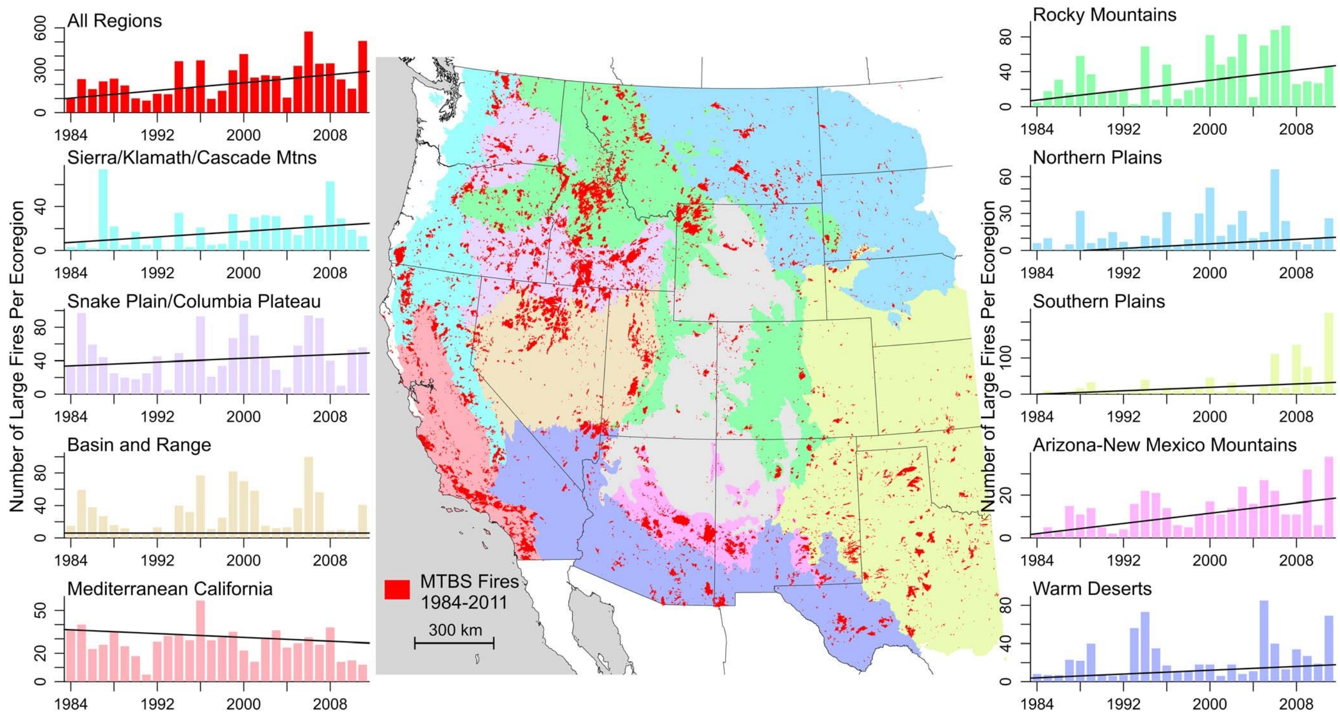
P.2-7 (cont.)

For example, 13 of the 20 largest fires in California have occurred since 2000 (see Figure 2.2-5).

When compared with fig 2.2-2, this is a good illustration that fires size does not track with fire loss.

Trend data is showing that large fires are increasing at a rate of seven fires per year with total fire area increasing approximately 87,000 acres per year (Dennison et al., 2014). ,

This is not supported by med. ca., which in most of the state shows a slight downward trend. Furthermore, the Dennision paper is for a study area far beyond California, and therefore the statement is misleading. We don't know how much of the increase was in California. There are better papers to cite, *e.g.* Keeley et al 2003, looking closely at fire differences in southern California counties.



There is strong scientific agreement that the use of fuel treatments helps to reduce the impact and damage from wildfires (Reinhardt et al., 2008; Safford et al., 2009; Schoennagel and Nelson, 2011).

(*Reinhardt et al., 2008)*

To the contrary, what Reignhardt, et al., actually say is:

> "*....destruction in the WUI is primarily a result of the flammability of the residential areas themselves, rather than the flammability of the adjacent wildlands. It may not be necessary or effective to treat fuels in adjacent areas in order to suppress fires before they reach homes; rather, it is the treatment of the fuels immediately proximate to the residences, and the degree to which the residential structures themselves can ignite that determine if the residences are*

vulnerable."

(Safford et al., 2009)

Yes, but Safford was specifically referring to coniferous forests, not shrublands, woodlands, grasslands, *etc.*.

P.2-7 (cont.)

(Schoennagel and Nelson, 2011)

Again, this reference is specific to coniferous forests and emphasizes that fire for restoration purposes should be limited to high-need conifer forests.

This objective seeks to reduce the size of fires through the use of appropriate vegetation treatments. The assumption is that decreasing fire size will have a resulting decrease on overall fire suppression costs (Figure 2.2-6).

This assumption is not supported. Where the fire occurs is more important than the size. See figure 2.2-2 vs figure 2.2-5, and consider the Tunnel fire, relatively small but the most costly. Figure 2.2-6 shows that larger fires cost less (per acre) than smaller fires.

P.2-9

Individual vegetation treatments within larger fires may be beneficial if the collection and pattern of treatment areas has been developed using landscape level strategies.

(*Finney, 2005)*

This study is in Arizona Ponderosa pine, and it is not clear what, if any, communities in California these findings would apply to.

Benefits from subsequent activities can be realized in the initial attack phase when ignitions and projects intersect and fires can be controlled at smaller sizes. As fires escape initial attack they grow more complex, with many factors contributing to the costs of fire suppression and damage.

There is no support indicating that fuels are always the determining factor in fire early containment or small size; more likely determinants are weather conditions and response time. As such, this reasoning does not support fuel treatments.

P.2-10

Species composition within these forests is also rapidly changing. Plant and animal species that require open conditions or highly patchy edge ecotones are declining and streams are drying as evapotranspiration increases due to increased stocking.

Absent specific citations, the statement is not supported, and is too broad to be accurate.

Additionally, unnaturally severe wildfires have destroyed vast areas of forest, subjecting *streams to sedimentation following high severity fires (Bonnicksen, 2003).*

This is a vague reference, not widely available. It refers only to forests, and is not supported in the scientific literature.

P.2-10 (cont.)

Invasive plants may change fire behavior and fire regimes, often by increasing fuel bed flammability, which increases fire frequency. These changes may also impact habitat loss and small mammal populations. Cheatgrass serves as a classic example of an exotic which has significantly altered the fire ecology in the Western United States and Canada; it is a winter annual which grows rapidly during late winter and early spring and provides a continuous fuel bed of light flashy fuel once cured in early summer.

This is documented in the scientific literature and should be cited here. This is also a good argument for why fuel treatments should not be done, especially at lower elevations. Flash fuels may increase the rate of spread and facilitate fire into areas that might not have burned otherwise. Fuel breaks may have contributed to trend of increased of fire size in recent years.

P.2-11

The restoration of native, fire-adapted plant communities is a critical need across portions of the western United States (Agee and Skinner, 2005). In California, fuel treatments have been shown to reduce fire severity (Skinner et al., 2004; Stephens et al., 2009), although fuel reduction projects within forested settings appear to be more effective in reducing burn severity as compared to some southern California chaparral ecosystems.

This is only applicable to forested (coniferous) systems. Chaparral is a crown fire ecosystem and burns are always high severity (removal of all or most above ground vegetation). Lowering severity or increasing fire frequency is undesirable in these systems, and fuel treatments have not been shown to limit fire size.

P.2-13

A multitude of factors in the wildland fire environment contribute to fire behavior. One of the most important factors that can influence fire behavior is the fuel type. Fuel type represents an identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause resistance to control under specified weather conditions (NWCG, 2014; Anderson, 1982).

This contradicts the statement on p.2-2 that grass, trees, and shrubs are all similar.

P.2-15

Fire in shrub dominated groups is generally carried in the surface fuels comprised of litter cast by the shrubs as well as the grasses or forbs in the understory.

Under natural conditions, dense shrublands (e.g. chaparral) do not have an understory. Other, less dense shrublands (eg, sage scrub) have a large herbaceous component. The statement is not supported with relative citations. (Indeed, there are no citations on this entire page, despite the numerous assertions.)

P.2-15 (cont)

Tree dominated groups are typically characterized as a mixed severity regime with a 0-35-year fire frequency….

Zero frequency seems unlikely; citations should be provided.

P.2-19

Table 2.2-3

It is unclear, and no support is provided, what could justify fuel treatments in desert shrublands. These systems are not adapted to fire return intervals less than centuries and are very sensitive to disturbance. Studies have documented type conversion in these systems as a result of any disturbance. Fuel treatments would likely increase the fire hazard in these systems and lead to potentially cascading ecological loss.

P. 2-23

Potential fuel break treatments must address a clear fire prevention need, identifying assets at risk, and be based on local activity such as ignition patterns and fire spread history.

Fuel breaks should also offer a reasonable return on the investment by offering some protection. Fuel breaks are only effective at preventing fires from reaching assets if there are resources deployed to the fuel break. The vast majority of fires that result in significant resource loss are wind-driven, a condition that is extremely dangerous for deployment along fuel breaks, with ember ignition causing spot fires well ahead of the front. Fuel breaks are ineffectual under these conditions. Under moderate conditions they can be useful, but they can often be created ad hoc in this circumstance, and exactly where they are needed. Why guess ahead of time?

While not controlled experiments, there are case studies that CAL FIRE and other local fire agencies have developed that can point to site specific treatments that helped suppression efforts. The Toro Creek Fire Case Study within this section is a good example, as well as several others in Chapter 4.1.5.2.

Re: Case studies used in this document:
While of interest, case studies are anecdotal and can hardly be applied to other situations/places/times/weather conditions. While they may by the incentive for further research, they are not considered reliable enough to support a large-scale program or action like the VTP. With the abundant scientific literature available on California fire ecology and regimes, it is unclear why the authors would resort to case studies, except in that the literature does not support their goals.

P. 2-24

Table 2.2-4

There is no evidence presented that fire is an effective tool in shrubland restoration. Many shrublands are at risk from burning too frequently and many (e.g. deserts) are not adapted to any fire or disturbance. Any unsupported claims to the contrary should be viewed with extreme skepticism. The authors fail to present any support for this activity.

Suggested, but not comprehensive, literature that should be included in scientific review of the VTP-PEIR

Below are papers that need to be considered within the document and particularly in the planning of the Vegetation Treatment Plan. In some cases these papers are cited within the VTP-PEIR but the citations are erroneous and the significance of the studies in fire management is over-looked or ignored.

This not an exhaustive list but rather a good start for developing Vegetation Treatment Program that will address systems and fire regimes beyond high elevation coniferous forests with frequent surface fire regimes. Papers that are cited by the below papers, or cite the below papers, would also likely offer fertile contributions to the development of a robust plan.

Firebrands and fuel beds

Gollner, Michael J., Raquel Hakes, Sara Canton and Kyle Kohler. 2015. Final Report Pathways for Building Fire Spread at the Wildland Urban Interface. Fire Protection Research Foundation report . P.32- 44.
http://www.nfpa.org/~/media/files/research/research-found ation/research-foundation-reports/for-emergency-responders/rfpathwaysforbuildingfirespreadwui.pdf?la=en

Koo, Eunmo, Patrick J. Pagni, David R. Weise, and John P. Woycheese. Firebrands and Spotting Ignition in Large-Scale Fire. International Journal of Wildland Fire 19 (2010): 818-843.

Viegas, DX, M. Almeida, J. Raposo, R. Oliveira and C. X. Viegas (2014) Ignition of Mediterranean Fuel Beds by Several Types of Firebrands. Fire Technology 50:61–77

Fuel age and fire spread

Halsey, R. W., J.E. Keeley, and K. Wilson 2009. Fuel age and fire spread: Natural conditions versus opportunities for fire suppression. Fire Management Today 69:22-28.

Moritz, M. A. 1997. Analyzing extreme disturbance events: fire in the Los Padres National Forest. Ecological Applications 7:1252–1262.

Moritz, M. A., J. E. Keeley, E. A. Johnson, and A. A. Schaffner. 2004. Testing a basic assumption of shrubland fire management: Does the hazard of burning increase with the age of fuels? Frontiers in Ecology and the Environment 2:67–72.

Keeley JE, Zedler PA 2009 Large, high-intensity fire events in southern California shrublands: debunking the fine-grained age-patch model. Ecological Applications 19, 69–94

Keeley, J.E.; Fotheringham, C. J.; Morais, M. 1999. Reexamining fire suppression impacts on brushland fire regimes. Science. 284: 1829–1832

Keeley, Jon E., Hugh Safford, C.J. Fotheringham, Janet Franklin, and Max Moritz. 2009 The 2007 Southern California Wildfires: Lessons in Complexity. Journal of Forestry 107.6: 287-296.

Terminology issues

Keeley, J.E. 2009. Fire intensity, fire severity and burn severity: A brief review and suggested usage. International Journal of Wildland Fire 18:116-126. doi: 10.1071/WF07049

Jain T, Pilliod D, Graham R. 2004. Tongue-tied. Wildfire 4, 22–36.

Relevant coniferous forest papers not included

Gonzalez, Patrick, John J. Battles, Brandon M. Collins, Timothy Robards and David S. Saah. 2015. Aboveground live carbon stock changes of California wildland ecosystems, 2001–2010 Forest Ecology and Management 348: 68–77

Baker WL. 2015. Are High-Severity Fires Burning at Much Higher Rates Recently than Historically in Dry-Forest Landscapes of the Western USA? PLoS ONE 10(9): e0136147. doi:10.1371/journal.pone.0136147

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Archetypes of Community Wildfire Exposure from National Forests of the Western US

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Citation Details

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Research Paper

Archetypes of community wildfire exposure from national forests of the western US

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ABSTRACT

Risk management typologies and their resulting archetypes can structure the many social and biophysical drivers of community wildfire risk into a set number of strategies to build community resilience. Existing typologies omit key factors that determine the scale and mechanism by which exposure from large wildfires occur. These factors are particularly important for land managing agencies like the US Forest Service, which must weigh community wildfire exposure against other management priorities. We analyze community wildfire exposure from national forests by associating conditions that affect exposure in the areas where wildfires ignite to conditions where exposure likely occurs. Linking source and exposure areas defines the scale at which cross-boundary exposure from large wildfires occurs and the scale at which mitigation actions need to be planned. We find that the vast majority of wildfire exposure from national forests is concentrated among a fraction of communities that are geographically clustered in discrete pockets. Among these communities, exposure varies primarily based on development patterns and vegetation gradients and secondarily based on social and ecological management constraints. We describe five community exposure archetypes along with their associated risk mitigation strategies. Only some archetypes have conditions that support hazardous fuels programs. Others have conditions where managing community exposure through vegetation management is unlikely to suffice. These archetypes reflect the diversity of development patterns, vegetation types, associated fuels, and management constraints that exist in the western US and provide a framework to guide public investments that improve management of wildfire risk within threatened communities and on the public lands that transmit fires to them.

1. Introduction

The increase of wildfire risk in many regions around the world has prompted a wide-ranging discussion of responsible drivers, potential solutions, and how communities and land managing organizations can adapt to these changes (Smith et al., 2016). Existing wildfire risk policy has been ineffective at mitigating these trends, in large part due to overly general prescriptions that have failed to account for the diversity of social and ecological factors that shape wildfire risk. Typologies are used in natural disaster risk management to match mitigation programs to a diverse set of exposure factors (Mileti, 1999), and in the case of wildfire, the biophysical and social dimensions of risk (Steelman, 2016). A typology that combines social and biophysical aspects of wildfire exposure has the potential to improve risk governance systems by highlighting specific priorities and trade-offs among mitigation and adaptation strategies across diverse public and private landscapes (Smith et al., 2016; Spies et al., 2014).

Wildfire risk concentrates within the Wildland-Urban Interface (WUI), the area where development and infrastructure are located within or adjacent to wildland vegetation (e.g., forests, shrublands, grasslands). Combined with longer fire seasons, altered ignition patterns, and accumulation of fuels, growth of the WUI has accelerated suppression costs and wildfire-related losses (Schoennagel et al., 2017). The exact definition of the WUI varies by country and statute. In the US, the two classes of WUI most commonly described are the *intermix WUI*, where development is scattered within wildlands, and the *interface WUI,* where development abuts wildlands (USDA and USDI, 2001). Maps depicting the extent of WUI in the US now span more than two

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0169-2046/

decades and show that growth of WUI has surpassed that of any other major land cover class (Radeloff et al., 2018). National maps have also been recently developed for Canada (Johnston & Flannigan, 2018) and for much of Europe (Modugno, Balzter, Cole, & Borrelli, 2016). Other examples are region specific, including the Mediterranean (Alcasena, Evers, & Vega-Garcia, 2018; Chas-Amil, Touza, & García-Martínez, 2013; Lampin-Maillet et al., 2010), Australia (Gill, Stephens, & Cary, 2013; Price & Bradstock, 2014), and South America (Argañaraz et al., 2017).

General principles for addressing wildfire risk within and around the WUI are well documented (Calkin, Cohen, Finney, & Thompson, 2014; Schoennagel et al., 2017). Discouraging future development limits future exposure (Alexandre, Stewart, Keuler, et al., 2016; Syphard, Bar Massada, Butsic, & Keeley, 2013) while planning codes shape the processes by which subdivision and development occur (Headwaters Economics, 2016; Syphard et al., 2013). Hazardous fuel treatments and prescribed burns reduce fuel loads, which in turn changes fire behavior and allows wildfires to be better managed (North, Stephens, et al., 2015; OIG, 2016). Removing flammable vegetation surrounding structures and updating building standards decreases the chance of loss when exposure does occur (Cohen, 2000; Gibbons et al., 2012; Syphard, Brennan, & Keeley, 2014).

The exact suite of viable mitigation actions, however, will vary with community and landscape (Alexandre, Stewart, Mockrin, et al., 2016; Moritz et al., 2014). For instance, the effectiveness of fuels reduction programs is questionable in certain vegetation types (e.g., Cohen, 2010) and may be ecologically inappropriate in others (Schoennagel, Veblen, & Romme, 2004). In other situations, effective risk mitigation actions (e.g., fuel breaks, prescribed burns, vegetation removal, etc.) may not be socially palatable (Steelman & Burke, 2007) or cost-effective (e.g., when structure density is low or access is limited). Communities further differ in their tolerance of wildfire risk (McCaffrey, 2004, 2008) and in their trust in formal authorities to coordinate risk mitigation efforts (Paveglio et al., 2015). Many fire protection districts lack the personnel or resources to proactively address exposure at a local level, especially where development is low density or isolated. Steep hillslopes can limit both pre-suppression and suppression activities (North, Brough, et al., 2015).

Mitigation strategies need to address factors linked to community exposure at multiple scales. In the western US, for instance, a substantial portion of community wildfire exposure is linked to public lands surrounding communities, including land managed by the US Forest Service (Ager et al., 2017). For these communities, exposure is tied to large landscape-scale properties such as land ownership, ignition patterns, and fuel conditions distant from the urban interface. At the same time, vegetation and development patterns within the WUI directly shape the conditions under which structures are exposed to fire and wildfire losses are most likely to occur (Alexandre, Stewart, Keuler, et al., 2016; Gibbons et al., 2012; Syphard et al., 2014). Furthermore, most applications of the WUI only consider the spatial relationship between development and wildlands, which fails to account for the specific mechanisms by which these two land types relate to each other. This deficiency is particularly striking considering the degree to which wildfire activity can vary by region. Ignoring wildfire transmission can lead to management prescriptions that are focused exclusively on the wildland or interface, thereby negating transboundary risk linkages (Sjostedt & Linnerooth-Bayer, 2001) and contributing to scale mismatches in planning (Cumming, Cumming, & Redman, 2006) and risk governance (Lidskog, Soneryd, & Uggla, 2010; Steelman, 2016).

Matching risk mitigation to varying context and scale requires cohesive planning. This can be seen in the recent US National Wildfire Cohesive Strategy (USDA and USDI, 2018), which emphasizes the need for integration of social and biophysical aspects of risk (Fischer, Spies, et al., 2016; Moritz & Knowles, 2016) and increased collaboration across boundaries (OIG, 2016). As the largest bearer of federal costs for both pre-suppression and suppression (Calkin, Thompson, & Finney, 2015), the US Forest Service (USFS) maintains a pivotal role in implementing the Cohesive Strategy, especially given that wildfire represents one of the agency's most effective tools for restoring and maintaining resilient forests (North, Stephens, et al., 2015; Schoennagel et al., 2017). Systematically characterizing risk at both community and landscape scales allows large land managing agencies like the USFS to accommodate wildfire within diverse transboundary fire regimes (Ager et al., 2017).

In this paper, we characterize community wildfire risk from fires originating on national forests of the western US. We organize community exposure into risk archetypes based on community and forest conditions known to influence wildfire behavior and constrain mitigation strategies at both community and landscape scales. We improve on existing community wildfire risk typologies by joining ‘in-situ’ conditions near threated homes (c.f. Lampin-Maillet et al., 2010) with ‘ex-situ’ conditions where many large wildfire originate (Ager et al., 2017). Finally, we discuss how community wildfire exposure archetypes advance the development of cross-boundary, socio-ecological frameworks for risk management (e.g., Steelman, 2016) and how such a framework can be used to adapt the national wildfire strategy to local conditions. This work addresses key gaps in current wildfire planning including: (a) inadequate characterization of exposure to large fires; (b) one-size fits all approaches to mitigating fire hazard; and (c) definition of scales applicable to management of socio-ecological fire systems.

2. Methods

The following section describes how wildfire exposure was estimated and characterized among communities of the western US. We combined a national dataset of simulated wildfires and a national map of the WUI in the western US to (a) identify areas of national forest that expose communities to wildfire; (b) identify areas of communities where that exposure is greatest, and; (c) classify wildfire exposure of affected communities based on factors known to affect wildfire behavior and constrain management at both community and landscape scale.

2.1. Study area

We examined community exposure to wildfire igniting on national forests within the 11 states of the western US using structure counts derived from 2010 SILVIS WUI data (Radeloff et al., 2005, 2017). Communities were defined using official Census-Designated Places (CDP), which are designated geographic areas used to identify concentrations of populations for statistical purposes (Bureau of the Census, 2008). 5118 CDPs are found in the western US. Structures outside of CDP boundaries were assigned to the nearest CDP based on a 45-minute drive-time. Drive-times were estimated by applying the cost allocation tool in ArcGIS Desktop 10.3 to the North America Detailed Streets dataset (ESRI, 2012). While forty percent of structures (10.8 million) in the dataset were classified as intermix or interface WUI (Radeloff et al., 2005), it is important to note that exposure is still possible in non-WUI classified areas. The median community contained 97 WUI or non-WUI polygons with a median polygon size of 2.4 ha. California (CA) had the greatest number of communities (30%), followed by Washington (WA, 12%), Colorado (CO, 9%), Arizona (AZ, 9%), New Mexico (NM, 9%), Oregon (OR, 7%) and Montana (MT, 7%), Utah (UT, 6%), Idaho (ID, 5%), Wyoming (WY, 4%) and Nevada (NV, 3%). Communities varied in size from ten structures to more than a half million (San Diego, CA, Phoenix, AZ, Los Angeles, CA) with a median of 890.

2.2. Simulation exposure to communities

Our analysis relied on a national 'lib of possible wildfires perimeters developed in 2014 by the USFS Missoula Fire Science Laboratory

(Short, Finney, Scott, Gilbertson-Day, & Grenfell, 2016). The dataset contains several million wildfires representing tens of thousands of hypothetical fire seasons under current conditions. Fire seasons were constructed on the historical relationship between historical fire size, weather conditions, and energy release component (ERC) (Finney, McHugh, Grenfell, Riley, & Short, 2011). Their simulations were performed on 2012 LANDFIRE data describing topography, fuels and vegetation structure at a 270 m resolution (Rollins, 2009). Ignition points were randomly distributed. Fuel moisture levels, ignition density, ignition timing, and wind speed were built using streams of weather data pulled from a national network of weather stations. Simulated fire size distributions were validated against observed distributions and were statistically adjusted to account for the effect of fire suppression (Finney, Grenfell, et al., 2011; Finney, McHugh, et al., 2011).

We limited our analysis to those FSIM wildfires that ignited on national forests and burned into western US communities (as defined using census designated places), which resulted in a data subset of 367,000 fire perimeters (out of approximately 2 million records). Housing unit (HU) exposure for each fire was calculated using the geometric intersection of fire perimeters with polygons from the SILVIS WUI dataset that contained structures. Fig. 1 shows the perimeters of two wildfires that burn into an adjacent community, which is divided into polygons according to development density. The intersection of each fire with the community results in a set of intersected polygons. If W_n represents the set of polygons for fire *n*, the exposure (HU) resulting from fire *n* is

$$e_n = \sum_{i=1}^{W_n} A_i d_i$$

where A_i is the area (ha) of the intersected polygon and d_i is the density of structures (HU ha^{-1}). The combined exposure an entire community therefore represents the sum of exposure for all fires intersecting that community. Since wildfires represent thousands of potential fire seasons, the annual exposure (HU yr^{-1}) for community j is

$$e_j = \sum_{n=1}^{F_j} \frac{e_n}{s}$$

where F_j is the set of exposure values (HU) for community *j* and *s* is the number of total number of seasons simulated (yr). The annual community exposure (HU yr^{-1}) reflects the average number of structures within a community that are exposed to wildfire from national forests each year.

Initial screening of exposure data indicated that 2560 communities in the study area received at least some exposure to fire from the national forest. Given the skewed distribution of wildfire exposure among communities, we constrained our analysis to the top 20% (n = 516). The top 20% of communities collectively accounted for 80% of the annual structure exposure, and each of these communities had an estimated annual exposure greater than or equal to 1.0 HU yr^{-1}. Selected communities were found in all 11 states of the study area and most densely clustered in southern CA, the northern Sierra of CA, the western valleys of MT, the Wasatch front of UT, and the central plateau in AZ.

2.3. Characterizing wildfire exposure

Community exposure was characterized using attributes known to affect potential fire exposure and hazard (Table 1), including development density (HU ha^{-1}), canopy cover (%), conditional flame length (CFL – m), slope (%), fuel models (Scott & Burgan, 2005), restoration needs (i.e., vegetation departure), and management constraints. For simplicity, fuel models were grouped into four classes: grass/shrub fuels, shrub fuels, forest fuels, and other. Agricultural lands were included to distinguish fires in natural grass/shrubland from agricultural fields, where fire behavior is mediated by crop management and irrigation. Information on development density and WUI classification was taken from SILVIS WUI attributes and included WUI type (intermix, interface) and structure density (low, medium, high). We included the majority fire regime (FRG) to identify fire-adapted ecosystems within the national forest (i.e., FRG1 & FRG3, see Rollins, 2009). Finally, we identified protected areas where access for mechanical fuel treatments is restricted (USGS Gap Analysis Program, 2016).

These variables were used to construct a multivariate description of community exposure based on the characteristics of (a) the 100-hectare area immediately surrounding each ignition point and (b) the area of the WUI intersecting the wildfire perimeter (refer to Fig. 1). These variables were then averaged across all fires that reached the community as weighted by the magnitude of HU exposure. Thus, the exposure-weighted average value for variable $\bar{x}$ of community *j* is

$$\bar{x}_j = \sum_{n=1}^{F_j} e_n x_n \Bigg/ \sum_{n=1}^{F_j} e_n$$

where x_n is the fire-specific value for either (a) the areas surrounding the point of ignition within the national forest or (b) the exposed area of the community, and e_n represents the magnitude of exposure resulting

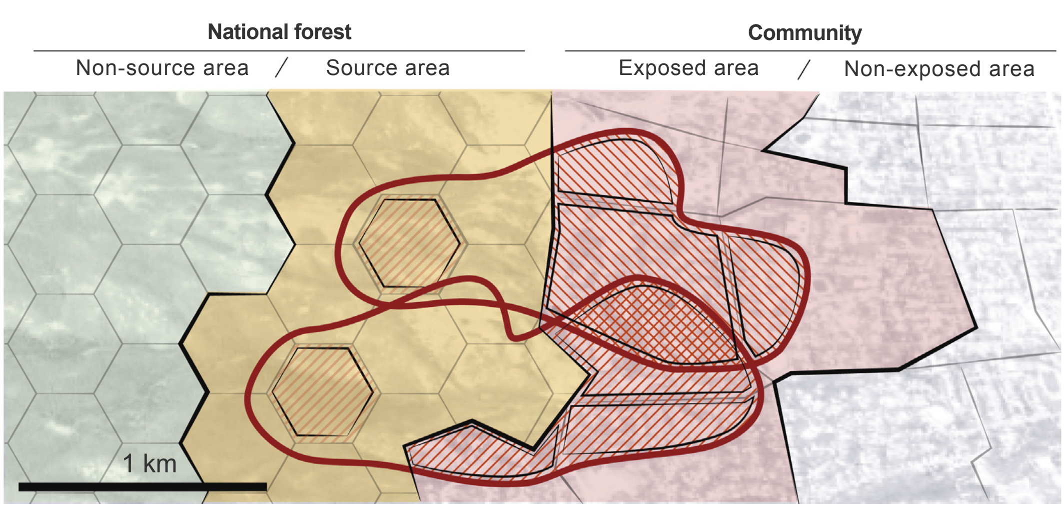

Fig. 1. Community wildfire exposure was determined using the area where wildfire and development intersect (red-hashed area). The archetype of community exposure was based on conditions within both source area where wildfire ignited (yellow-hashed area) and the exposed area of the community (red hashed). Conditions for both areas were averaged for the entire community based on thousands of possible wildfires. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Table 1
Variables used to distinguish nature of wildfire exposure among threatened communities. Variables reflect conditions found within the nation forest source area (NF), exposed areas of the community (C), or both (NF/C).

Variable	Zone	Description
Canopy cover (%)	NF/C	Canopy cover can both limit spread but also lead to crowning and spotting. Source: LANDFIRE
Flame length (m)	NF/C	Conditional flame length describes the intensity of the fire and can limit suppression. Source: FSIM
Forested fuel types (%)	NF/C	Fuel models 161–189 contain timber-understory and timber-litter fuels. Source: LANDFIRE
Shrub fuel types (%)	NF/C	Fuel models 141–149 contain woody shrubs and foliage with limited herbaceous fuels. Source: LANDFIRE
Grass/shrub fuel types (%)	NF/C	Fuel models 101–129 contain mixture of grasses and shrubs, including chaparral fuels in SE California. Source: LANDFIRE
Non-burnable fuel types (%)	NF/C	Fuel models < 100 include urban/developed, agricultural, and bare lands. Source: LANDFIRE
Slope (%)	NF/C	Slope amplifies fire spread, influences local winds, and limits access. Source: LANDFIRE
Manageable (%)	NF	Portion of forest that is manageable, i.e., not a protected status where mechanical thinning might be limited or prohibited. Source: PAD
Vegetation departure (%)	NF	Percent difference in successional class from historical reference conditions. Suppression in fire-adapted forest increases departure. Source: LANDFIRE
Low-severity fire (%)	NF	Fire regime group 1. Fire occurred at < 35-year fire return interval, low and mixed severity. Vegetation often fire adapted. Source: LANDFIRE
Mixed-severity fire (%)	NF	Fire regime group 3. Fire historically occurred at 35–200 year fire return interval, resulted in low and mixed severity. Vegetation often fire adapted. Source: LANDFIRE
High-severity fire (%)	NF	Fire regime group 4. Fire historically occurred at 35–200 year fire return interval, replacement severity. Source: LANDFIRE
Infrequent fire (%)	NF	Fire regime group 5. Fire historically occurred at > 200-year fire return interval, any severity. Source: LANDFIRE
Agricultural lands (%)	C	Percent of WUI classified as agriculture or pasture. Agricultural lands are much less likely to carry fire due to intensive management. Source: NLCD
Intermixed WUI (%)	C	Development (density > 1 hu/6.17 km^2) that intersects with wildland vegetation (> 50% cover). Source: SILVIS
Interface WUI (%)	C	Development where wildland vegetation cover < 50% but located < 2.4 km from heavily vegetated area (> 75% wildland vegetation, > 5 km^2). Source: SILVIS
Non-WUI (%)	C	Development not classified as either interface or intermix due to lack of structure density, lack of wildland vegetation, or lack of proximity to wildland vegetation. Source: SILVIS
Percent high density (%)	C	Percent of community exposure from areas with structure density > 741 hu/km^2. Source: SILVIS
Percent medium density (%)	C	Percent of community exposure from areas with structure density > 49.5 hu/km^2. Source: SILVIS
Percent low density (%)	C	Percent of community exposure from areas with structure density > 6.17 hu/km^2. Source: SILVIS

from that fire. Weighting emphasized the community and landscape conditions where exposure most commonly occurred (e.g., at the periphery of the community or national forests). For example, we found that exposure in Wenatchee, WA, occurred in developed areas where the canopy cover averaged 6% and originated in the national forest where the canopy cover averaged 41%, which differs from the average canopy cover for either the community (less) or the greater national forest (more). The resulting dataset contained 516 rows, where each row described the exposure conditions for a single community using the variables listed in Table 1.

2.4. Gradient and cluster analysis of wildfire exposure

The community exposure data were evaluated using principal component analysis (PCA) as implemented in the *psych* package in R (Revelle, 2016) in order to isolate the principal dimensions of community exposure. Variables were scaled before the PCA, and the resulting components were rotated using *varimax* rotation to minimize cross loading of variables and facilitate interpretation (Jolliffe, 2002). We determined the number of components to retain using parallel analysis (O'Connor, 2000). Components were treated as significant when their respective eigenvalues exceeded those generated using a randomly shuffled dataset. Eight components were retained using this criterion, which explained 80.2% of the variance within the exposure data (Fig. 2-A).

Archetypes of community exposure were assigned by clustering on component scores using the PAM algorithm as implemented in the *cluster* package in R (Maechler et al., 2015). Compared to k-means, PAM clusters are less sensitive to outliers and are considered more appropriate for nonparametric data (Kaufman & Rousseeuw, 1990). Since divisive clustering solutions like PAM are sensitive to the initial starting points, we used consensus aggregation to make final archetypes assignments and to report the stability within each archetype (Monti, Tamayo, Mesirov, & Golub, 2003). This bootstrapping procedure calculates cluster solutions for 100 subsamples constructed using 80% of observations randomly sampled from the original dataset with replacement (Fig. 2-B). Communities were grouped according to their most frequent cluster/archetype assignment. The procedure was repeated across a range of cluster numbers and assessed using changes in both cumulative density function curves as well as the change in area under each CDF with each increase of k (see Monti et al., 2003 for a detailed discussion) (Fig. 2-C).

3. Results

3.1. Community exposure to wildfire originating from national forests

Transboundary community wildfire exposure was concentrated within distinct regions found in all 11 states in the western US (Fig. 3). The area of the national forest where community exposure originated (i.e., the source area) represented approximately 10.6 million hectares, or 16% of the total area of all national forests in the western US (66 million hectares). The portion of the national forest that contributed community exposure varied from less than 5% of the forest area (e.g., Gifford-Pinchot, Medicine Bow, or Mt. Baker-Snoqualmie National Forests) to greater than 80% (Angeles, San Bernardino, or Cleveland National Forests). As described above, 80% of wildfire exposure was concentrated among 20% of communities. Within these highly-exposed communities, 60% of the community area accounted for 80% of the total housing exposure. Exposure varied widely among communities. In extreme instances, 5% of the developed area of a community resulted in 80% of house exposure (e.g., where exposure was constrained to specific subdivisions) while in other cases exposure was spread equally across the community. The average distance between ignition points and points of housing exposure was 14.2 km and varied among communities from a low of 2.8 km to a high of 50 km.

Table 2 describes conditions related to exposure for both national forest source areas and exposed community areas among the 516 most highly exposed communities in the western US. On average, the simulated wildfires that burned into the WUI burned at moderate intensity (conditional flame length = 1.8 m), occurred under open canopy cover (22.5%), and were carried by a mixture of forest litter (34.8%), grass (51.7%) and shrub (13%) fuels. Fires generally ignited in fire-adapted forests (63%) that were not restricted from management based on forest

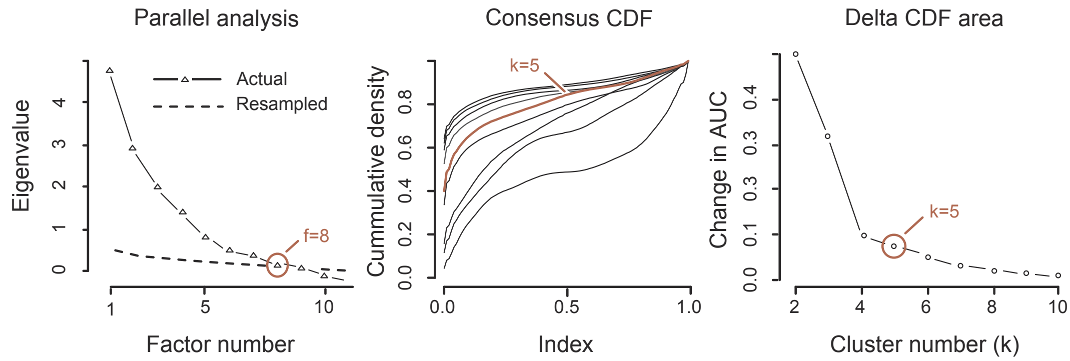

Fig. 2. Community wildfire exposure was grouped into 5 exposure archetypes based on 8 components. The number of components (f = 8) was determined using parallel analysis (left). The number of clusters (k = 5) was chosen based on the change in the area under the curve (right) for successive cumulative density functions (middle).

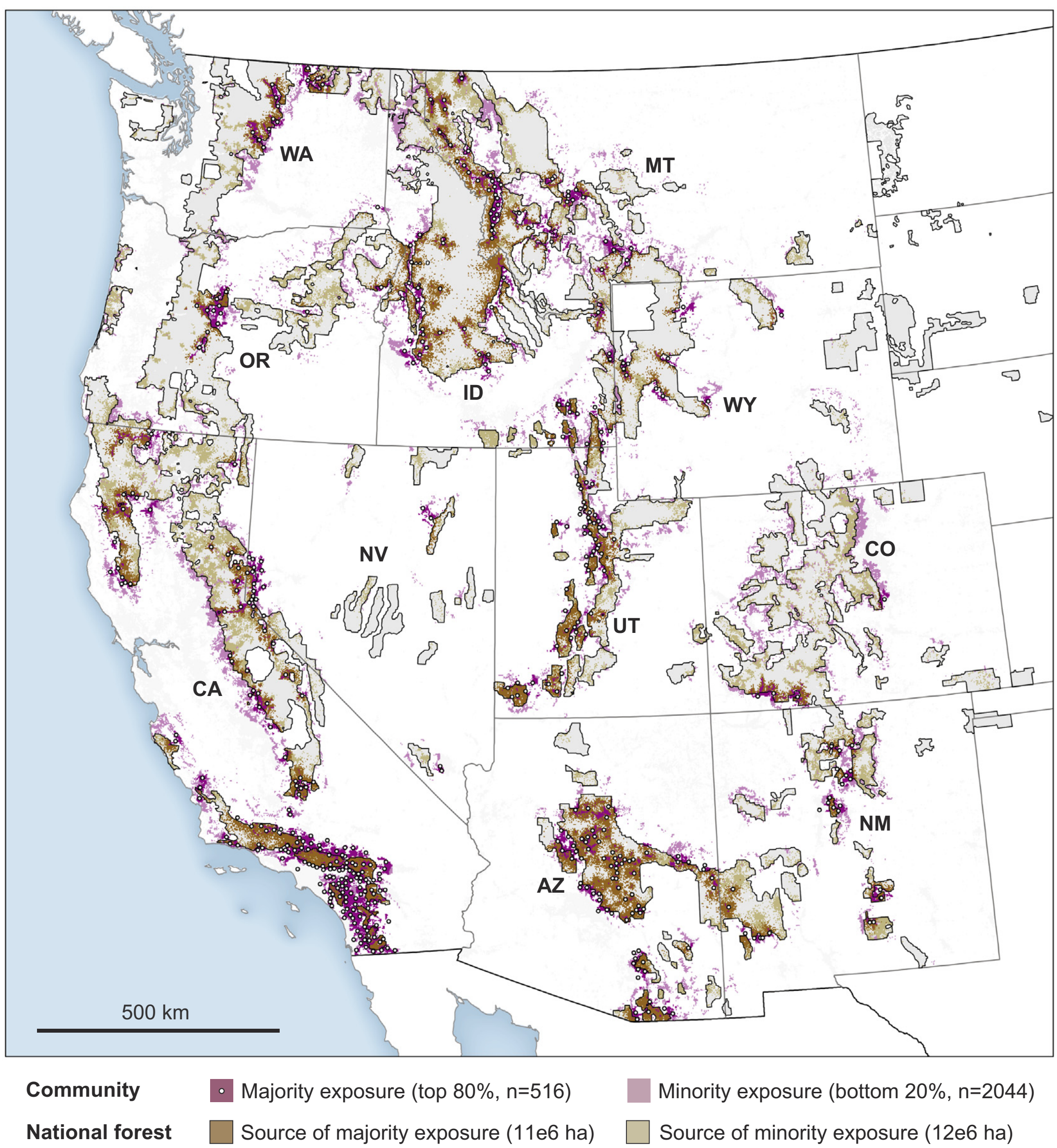

Fig. 3. Map of the western US shows the 516 communities that account for 80% of the wildfire exposure originating in the national forest. The areas of the national forest that contribute the most exposure are shown in orange and the most exposed areas within communities are shown in magenta. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

Table 2
Descriptive statistics of wildfire exposure among highly-exposed communities (n = 516). The reference values represent the average conditions among western national forests and western communities (WUI and non-WUI).

National forest variable	Mean (SD)	Reference	Community variable	Mean (SD)	Reference
Canopy cover	22.5 (12.7)	30.9	Canopy cover	7.4 (8.7)	5.6
Forest fuels	34.8 (25.6)	52.9	Forest fuels	11.1 (15.7)	12.0
Shrub fuels	13.0 (14.9)	6.6	Shrub fuels	9.0 (15.4)	2.7
Grass fuels	51.7 (27.3)	36.5	Grass fuels	54.1 (23.2)	23.4
Non-burnable fuels	0.0 (0.0)	3.9	Non-burnable fuels	25.8 (17.3)	61.8
Flame length	1.5 (0.3)	1.5	Flame length	1.5 (0.4)	0.6
Slope	18.6 (5.8)	16.5	Slope	5.6 (3.7)	2.6
Manageable lands	85.0 (19.0)	76.0	Agricultural lands	5.4 (9.3)	7.5
Vegetation departure	44.2 (12.3)	37.3	Intermixed WUI	50.1 (26.6)	9.7
Low-severity fire	40.2 (31.3)	30.3	Interface WUI	40.2 (26.1)	29.8
Mixed-severity fire	22.8 (28.4)	36.2	Non-WUI	9.7 (14.9)	59.7
High-severity fire	30.6 (28.2)	21.5	High-density development	16.1 (17.5)	65.7
Infrequent fire	6.2 (16.4)	10.4	Med-density development	53.8 (21.2)	27.8
			Low-density development	30.1 (24.5)	0.07

plan standards (85%). Compared to the non-source areas of the national forest, source areas were more open and had a greater portion of grass and shrub fuels. High frequency, low-severity (FRG1) and high frequency, high-severity (FRG4) were more common in source areas, while mixed-severity (FRG3) and infrequent fire regimes (FRG5) were less common. Compared to national forest source areas, exposed portions of the community were much more open (canopy cover = 7.4%), had small amounts of forest and shrub fuels (11.1% and 9% respectively), and had slightly lower fire hazard (conditional flame length = 1.45 m). Compared to the entire community, exposed areas were much more likely to be classified as WUI (either intermix or interface), and tended to occur in areas where housing density was lower, and as a result, had a greater portion of wildland fuels (predominantly grass).

3.2. Variation in conditions among highly-exposed communities

Components retained from the principal component analysis (labeled F1–F8) explained 80% of the difference in character of wildfire exposure among communities (Table 3). Reflecting the diversity of transboundary exposure among communities, variance was widely distributed across the eight components, and no component explained more than 18% of the total variance. Component F1 (18% of variance) related canopy cover to the ratio of forested fuels and grass fuels. Component F2 (17% variance) described the ratio of exposure in communities resulting from intermixed compared to interface development. F2 loadings also showed that interface communities had higher development density with a greater proportion of unburnable fuels while intermix communities had lower density and higher conditional flame length. Component F3 (12% variance) described the correlation between the percentage of shrub fuels and fire hazard. The relative independence in variance between F1 and F2 revealed how vegetation conditions vary widely among WUI classes in different communities. For instance, some communities where a preponderance of exposure occurred in interface WUI were still characterized by the denser and closed vegetation typically associated with intermix WUI.

The remaining five components characterized a smaller degree of differences among exposed communities. Component F4 (9% variance) described management opportunities and constraints in addition to the correlation between vegetation departure from historical conditions and the percent of manageable lands within the national forest. Component F5 (8% variance) showed a relationship between higher slope, canopy cover, forested fuels and absence of grass fuels. Component F6 (7% variance) described low-density exposure coinciding with agricultural/grazing lands with limited forest cover. The final two components described differences in fire regimes within the national forest source area. Component F7 (6% variance) described the communities exposed to fire originated from low-severity or mixed-severity fire regimes. Component F8 (5% variance), by contrast, identified community exposure from low-frequency, high severity fire regimes constrained either by lack of fuels or flammable conditions.

3.3. Archetypes of community wildfire exposure coming from national forests

Community exposure archetypes (labeled C1–C5) represent groups of communities with similar wildfire exposure characteristics (Fig. 4). Archetypes C2 and C4 were most common (n = 147 and n = 153 respectively) while C1 and C5 were least common (n = 49 and n = 58 respectively). Archetypes generally fell along a continuum from low canopy cover dominated by grassy fuels (C1 and C2) to closed canopy cover dominated by forested fuels (C3, C4, and C5). The consensus plot in Fig. 4 shows the portion of times that each of the 516 communities was assigned to each cluster. The final cluster assignment was based on the plurality value. Within-group consensus was highest for archetypes C1, C2 and C5 and lowest for C3 and C4. The dendrogram at the top of Fig. 4 reveals subgroups within each cluster, which are most notable in clusters C3 and C4. Table 4 describes the mean values and standard deviations for the exposure characteristics within each archetype. A brief description of the five primary community exposure archetypes follows.

C1: Infrequent-exposure communities (n = 49)

Archetype C1 communities were defined by low frequency, high severity fires limited by either fuels or flammability. Development in these communities was characterized by low-density and low-slope. Fuels were grass-dominated. The cluster included two distinct geographic pockets: the desert southwest with desert scrub and Mogollon chaparral and interior lodgepole pine and subalpine spruce-fir forests. Communities typifying the former included those surrounding the Phoenix metro area, AZ, while the later included communities of Big Sky, MT, and Jackson Hole, WY.

C2: Open-interface communities (n = 147)

Archetype C2 was most commonly associated with communities in southern California. Exposure in these communities commonly tended to occur in high-density interface development in steep slopes with open forest cover. Fuels represented a mixture of grass and shrubs fuels, including chaparral shrubland. Nearby national forests were open, departed from historical conditions, and frequently management limited. Vegetation in the national forest included chaparral and grassland historically shaped by frequent high severity fires. Communities include

Table 3
Loadings of exposure variables on the 8 components (F1–F8) used to distinguish community archetypes. Components are ordered by the variance explained. Loadings greater than 0.5 are shown in bold while loadings less than 0.1 are omitted. The top panel shows component loadings for variables describing exposure conditions within source areas of the national forest. The bottom panel shows loadings of exposure conditions within community exposure areas.

National forest variable	F1	F2	F3	F4	F5	F6	F7	F8
Canopy cover	**0.9**	0.11				0.11		0.2
Forest fuels	**−0.8**		−0.29		−0.13	−0.24		−0.14
Shrub fuels	**0.84**		-0.18		0.1	0.28		
Grass fuels		−0.13	**0.84**				0.27	0.17
Flame length	−0.29		**0.7**				0.18	0.2
Slope		−0.35	0.15	−0.34	**0.53**	0.27		0.35
Manageable lands	0.1			**0.92**				
Vegetation departure			0.11	**0.88**				0.13
Low-severity fire	0.36	0.18				−0.15	**−0.8**	0.32
Mixed-severity fire	0.41		0.14		−0.2	0.11	**0.81**	
High-severity fire	**−0.74**	−0.25		0.13	0.38			
Infrequent fire	−0.15		−0.13	−0.1	−0.16		−0.12	**−0.85**
Community variable	F1	F2	F3	F4	F5	F6	F7	F8
Canopy cover	**0.65**	0.37		0.11	0.41	−0.29		
Forest fuels	**−0.53**	0.38	**−0.51**		−0.38		0.14	0.17
Shrub fuels	**0.65**	0.19	−0.22	0.14	0.48	−0.22		−0.14
Grass fuels	0.16	0.16	**0.84**		0.11		−0.12	
Non-burnable		**−0.83**	0.13			0.16		
Flame length		0.2	0.13		**0.82**	−0.12		0.14
Slope		**0.61**	**0.57**				-0.18	
Agricultural lands	0.17	−0.17			−0.11	**0.79**	0.21	
Intermixed WUI	−0.13	**−0.86**						
Interface WUI		**0.87**				−0.26		
High-density development		**−0.7**				−0.39	−0.1	
Low-density development	0.14	0.61				**0.59**		
Statistic	**F1**	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**F8**
SS loadings	4.36	4.10	2.76	1.83	1.79	1.62	1.58	1.21
Proportional variance (%)	0.18	0.17	0.12	0.08	0.07	0.07	0.07	0.05
Cumulative variance (%)	0.18	0.35	0.47	0.54	0.62	0.69	0.75	0.80

Las Angeles, CA, Sedona, AZ, and Boise, ID.

C3: Mixed-interface communities (n = 109)

Archetype C3 was the most varied of the five archetypes. Vegetation contained a mixture of forested, grass and shrub fuels. Communities were largely unforested, while source areas contained open canopy mixed-conifer forests (ponderosa pine, pinyon-juniper, Douglas-fir). The exposure type was common throughout the western US, including moderate elevation communities of the SW and Great Basin regions. Typical communities included Bend, OR, Reno, NV, Flagstaff, AZ, and Santa Fe, NM. Some communities in C3 were similar to those in C2 and C4.

C4: Forested-intermix communities (n = 153)

Archetype C4 described communities with low-density development intermixed within a matrix of forest and agricultural lands; national forest source areas had high canopy cover and were adapted to historically low or mixed-severity fire. The archetype was common to the Northern Rockies, and communities on the east side of the Cascade/Sierra ranges, and higher mountainous areas of the SW. Communities of C4 had the lowest-density development and the highest community canopy cover of all archetypes. National forests were predominately Douglas-fir and ponderosa pine and to a lesser extent shrubland steppe. Typical communities included Colorado Springs, CO, Leavenworth, WA, Lolo, MT, Squaw Valley, CA, and Ruidoso, NM. Some C4 communities were similar to C3.

C5: Shrub-interface communities (n = 58)

Archetype C5 was found primarily in communities along the Wasatch Front where moderate density interface development occurred in areas with steep slopes. Forests had a mixture of low canopy-height trees and shrubs growing under conditions of wet springs and hot, dry summers. National forests contained pinyon-juniper woodland, Bigtooth Maple, Douglas and Grand-fir, and aspen forests. The combination of fuels and topography led to more common higher intensity burns. Example communities included Salt Lake City, UT, Bountiful, UT, and Elko, NV.

4. Discussion

We have shown how conditions contributing to community wildfire exposure differed markedly among communities in the western US, primarily with regards to forest cover, fuels, and development patterns, and secondarily with regards to conditions that either facilitate or hinder mitigation actions. While federal wildland fire policy in the US fosters a diversified approach to managing wildfire risk (e.g., promoting fire-adapted communities, restoring fire-resilient landscapes, and ensuring safe and effective wildfire response), it provides only limited guidance on how these policy goals can be translated into contextually-relevant strategies (Wildland Fire Leadership Council, 2014). The five archetypes of community exposure that we identified illustrate the need to match risk mitigation strategies to specific conditions that characterize a spectrum of transboundary risk contexts (Fig. 5). For example, expanding hazardous fuel treatments and prescribed burns are more likely to be effective and ecologically appropriate in exposure archetype C3 and C4 (North, Stephens, et al., 2015; OIG, 2016). In other cases, such as exposure archetype C2 and C5, mitigation efforts should focus more on the areas within and nearby development, which includes restricting development in fire-prone wildlands (Headwaters

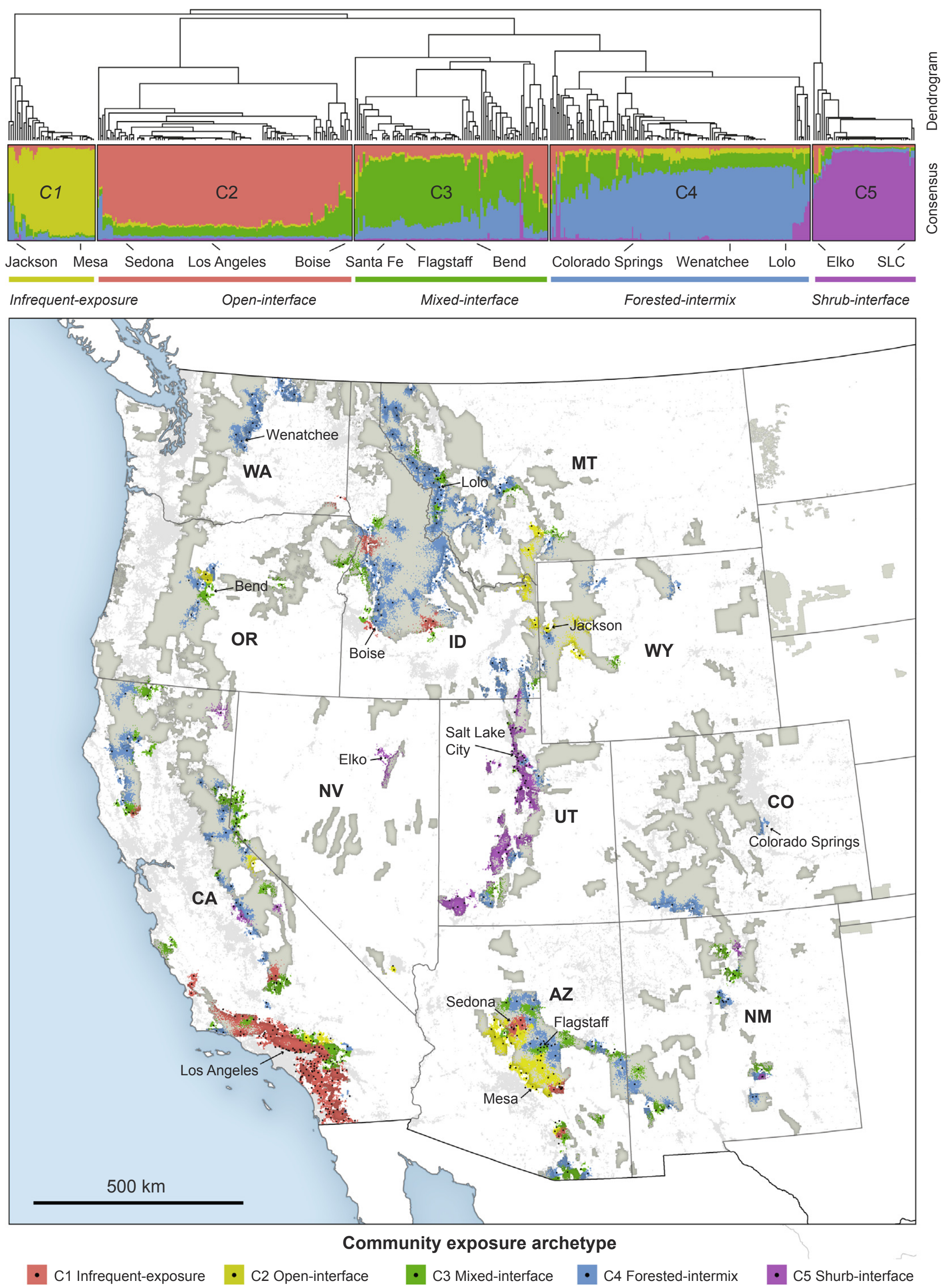

Fig. 4. Exposure patterns for highly-exposed communities divided into five archetypes, as shown in the dendrogram and consensus plot above and in the map below. Differences in the height of branches in the dendrogram reflect differences within and among clusters. Branches of the dendrogram dominated by a single color in the consensus plot represent greater homogeneity among communities within archetypes (e.g., C2 open-interface), while branches containing a mixture of colors represent groupings that are less distinct.

Economics, 2016) and reducing flammable vegetation surrounding homes (Gibbons et al., 2012). Improving community-based disaster planning and response (Calkin et al., 2014) may be particularly important in exposure archetype C5 due to shrub fuels, steep slopes, and high flame lengths, as observed both within the national forest source areas and exposed areas of the community. Our research also points towards the importance of strategic coordination among jurisdictions that share transboundary risk.

4.1. National forest sources areas

Most federal wildfire risk mitigation actions fall on publicly managed lands outside of designated WUIs (Schoennagel, Nelson, Theobald, Carnwath, & Chapman, 2009). While extensive, the source of community wildfire exposure typically represented only between 10% and 30% of most national forests (although some forests in southern California exceed 50%). Many of the highly-exposed communities that we

Table 4
Descriptive statistics show differences in the character of exposure among 5 community archetypes, represented as mean values and standard deviations (top panel: nation forest source areas, bottom panel: community exposure areas).

National forest variable	C1 Condition limited	C2 Open interface	C3 Mixed interface	C4 Forested intermix	C5 Shrub interface	Overall
Canopy cover	24 (10.2)	12.3 (5.8)	31.5 (10.3)	11 (12)	30.9 (9.7)	22.5 (12.7)
Forest fuels	36 (22.4)	18.6 (13.7)	53.4 (23.3)	22.1 (34)	35.7 (18.4)	34.8 (25.6)
Shrub fuels	10.1 (11.2)	16.4 (11.6)	5 (8.4)	3.4 (5)	39.4 (14.7)	13 (14.9)
Grass fuels	53.3 (22.2)	64.8 (19.5)	41.1 (23.4)	74.1 (33.4)	24.4 (22.1)	51.7 (27.3)
Flame length	1.7 (0.3)	2.0 (0.2)	1.8 (0.2)	1.6 (0.2)	2.2 (0.3)	1.8 (0.3)
Slope	17.4 (6.1)	21.6 (4.6)	17.1 (5.4)	13.8 (4.2)	21.4 (5.4)	18.6 (5.8)
Manageable lands	84.0 (22.7)	81.3 (18.6)	82.3 (21.9)	91.5 (13.1)	82.5 (20.1)	85.0 (19.0)
Vegetation departure	40.0 (14.3)	43.9 (13.0)	42.8 (12.3)	45.0 (10.1)	48.7 (12.4)	44.2 (12.3)
Low-severity fire	65.2 (21.8)	31 (20.1)	53.1 (32)	11.2 (16.7)	6.8 (15.3)	40.2 (31.3)
Mixed-severity fire	16.4 (18)	2.9 (7.5)	29.2 (24.5)	14.1 (18.3)	76.2 (21.4)	22.8 (28.4)
High-severity fire	15.9 (13.6)	65 (20.7)	15.4 (16.3)	26.1 (22.1)	14.6 (16.1)	30.6 (28.2)
Infrequent fire	2.3 (6)	1 (2.8)	1.9 (6)	48.6 (24.7)	2.4 (3)	6.2 (16.4)
Community variable	**C1 Condition limited**	**C2 Open interface**	**C3 Mixed interface**	**C4 Forested intermix**	**C5 Shrub interface**	**Overall**
Canopy cover	4 (4.8)	4.3 (5.9)	13.8 (10.3)	2.3 (3.7)	9.4 (8.3)	7.4 (8.7)
Forest fuels	5.6 (8.2)	6.6 (13.3)	22.8 (19.4)	5.7 (11.6)	6.4 (7.3)	11.1 (15.7)
Shrub fuels	8 (14.2)	7.3 (11)	6.3 (13.7)	4.9 (13.9)	26.3 (20.7)	9.0 (15.4)
Grass fuels	55.4 (20.8)	53 (20)	55.5 (24.8)	70.3 (23.1)	37.2 (19.6)	54.1 (23.2)
Non-burnable	31.1 (16.9)	33.1 (15.7)	15.4 (13.1)	19.1 (17.2)	30.2 (17.3)	25.8 (17.3)
Flame length	1.5 (0.4)	1.4 (0.3)	1.3 (0.4)	1.6 (0.4)	1.7 (0.6)	1.5 (0.4)
Slope	3.5 (1.9)	7.2 (3.8)	6.3 (3.5)	3 (1.7)	5.8 (4.6)	5.6 (3.7)
Agricultural lands	4.1 (7.1)	2.7 (6.5)	6.9 (10.3)	3.8 (9.4)	11.9 (12.3)	5.4 (9.3)
Intermixed WUI	43.3 (22.6)	39.4 (23.2)	66.1 (24)	58 (25.7)	41.4 (27.1)	50.1 (26.6)
Interface WUI	47.2 (21.3)	52.3 (24.6)	22.6 (20)	33 (23.9)	49 (27.7)	40.2 (26.1)
Non-WUI	9.5 (14.8)	8.3 (17.2)	11.3 (11.9)	9 (19.3)	9.7 (11.4)	9.7 (14.9)
High-density development	21.8 (18.7)	24.2 (18.8)	6.3 (8)	16 (19.5)	10.7 (14.2)	16.1 (17.5)
Med-density development	56.2 (17.8)	57 (20.2)	45.3 (22.1)	56.1 (20.1)	61.4 (21.5)	53.8 (21.2)
Low-density development	22 (16.3)	18.8 (20.2)	48.3 (24.2)	27.9 (21.3)	27.9 (23.3)	30.1 (24.5)
Count (n)	49	147	109	153	58	516

examined received fires from areas of the national forest where mechanical thinning, slash removal, and prescribed fires are suited to reduce wildfire size and severity (Stephens et al., 2012) and improve the capacity of managers to contain or suppress fires when needed. Despite valid concerns regarding the ecological impact of fuel reduction programs in some forest types (e.g., Schoennagel & Nelson, 2011), our results suggest that the areas of the national forest most likely to threaten communities tend to be lower-elevation, drier, open-structure mixed-conifer forests (Table 2). Such conditions tend to support fuels treatments that restore forest structure at the same time as reducing fire hazard to communities. On the other hand, as much as a third of community wildfire exposure originated on parts of the national forest where thinning and prescribed burns are less viable. This include community exposure from sparsely forested or non-forested lands where fire is carried either by fine-fuels dependent on inter-annual fluctuations in precipitation (Littell, Mckenzie, Peterson, & Westerling, 2009) or where fire ecology is characterized by high-severity and rapid regeneration of fuels (Keeley, Syphard, & Fotheringham, 2008). We further found that while community wildfire exposure typically came from national forests with relatively frequent fire return intervals, 10%

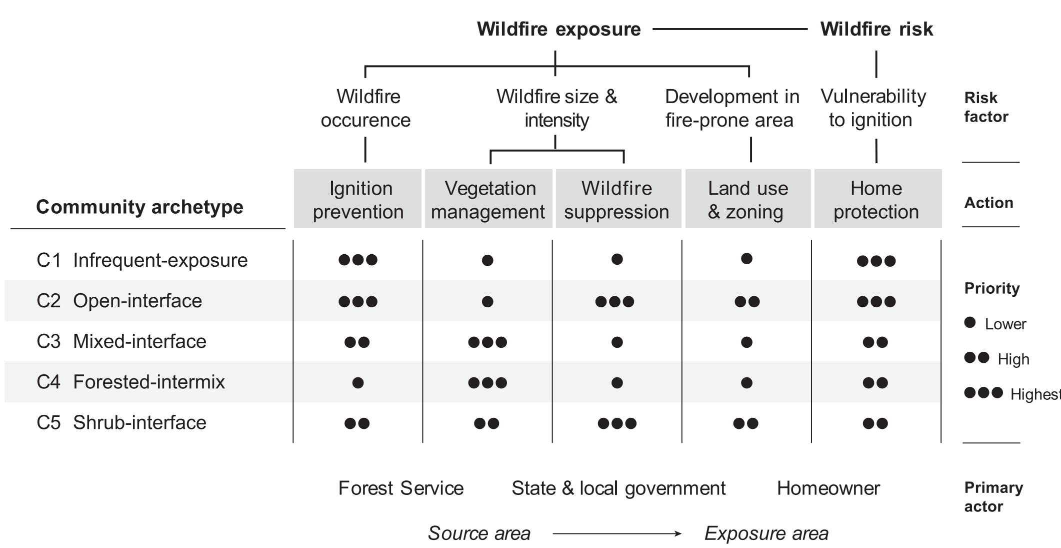

Fig. 5. Community archetypes reflect different priorities for managing wildfire risk. Vegetation management, for instance, is effective in only half of highly-exposed communities (i.e., C3 mixed-interface and C4 forested-intermix communities). Differences in prioritization also indicate different needs for cross-boundary coordination and which actors are involved.

of highly-exposed communities were notable for the longer wildfire return intervals constrained by either lack of fuels (e.g., Mogollon foothills in AZ) or climatic conditions that typically limit flammability (e.g., the greater Yellowstone ecoregion of WY and MT). We found surprisingly little difference among communities regarding manageability (generally high) and vegetation departure from historical condition (generally moderate) in national forest source areas. Compared to the national forest as a whole, source areas were less likely to be protected and more likely to be ecologically departed from historical conditions.

4.2. Community exposure areas

Our results confirm that community exposure to wildfire differs markedly with development patterns (Hammer, Stewart, & Radeloff, 2009). Half of estimated exposure occurred in low to moderate density intermixed development, much of which has likely occurred in jurisdictions that lack strong controls on development (Burby, 2006). These fire-prone regions often find themselves in a vexing mitigation paradox where the threat of wildfire exposure to low-density development is at odds with economic incentives to promote growth (Moritz et al., 2014; Steelman, 2008). The extent of exposure within intermix WUI lends to the scale mismatches that challenge existing wildfire risk governance (Burby, 2006; Cumming et al., 2006; Steelman, 2016). Nonetheless, land-use planning remains key to limiting wildfire exposure trends over time (Moritz et al., 2014; Nielsen-Pincus et al., 2010; Syphard, Keeley, Massada, Brennan, & Radeloff, 2012) and a growing number of fire-prone areas are implementing WUI-specific building and land subdivision codes (Headwaters Economics, 2016). Mitigating exposure of transboundary wildfire risk requires collaborative engagement among both organizations responsible for managing wildfire risk and others that may influence the behavior of actors on either side of the risk transmission boundary (Jakes et al., 2011; Williams et al., 2012). Without coordination, risk mitigation is less likely to address shared priorities and more likely to be rendered ineffective due to indirect spillover effects (Abrams et al., 2015; Fischer & Jasny, 2017). Many fire-prone regions in the western US are pioneering adaptive approaches to risk mitigation through wildfire learning networks, which provides a forum for communities to share and discuss local risk mitigation actions (Goldstein, Butler, & Hull, 2010) and Fire Adapted Communities programs that connect wildfire education, planning, and action with comprehensive resources (Fire Adapted Communities Coalition, 2014). The community exposure archetypes described in this article support these networks by identifying communities that face similar challenges and can draw on similar strategies to becoming fire-adapted.

4.3. Connecting multiple scales of exposure

Our work contributes a spatial planning framework for transboundary wildfire risk mitigation that defines specific geography encapsulating where people live, the local and *ex-situ* risk drivers, and the multi-party cooperation needed to manage the problem, all of which contribute to community and wildland resilience. Existing schemes for classifying wildfire risk rely solely on structure location and surrounding vegetation cover (e.g., Bar-Massada, Stewart, Hammer, Mockrin, & Radeloff, 2013; Chas-Amil et al., 2013; Lampin-Maillet et al., 2010). Focusing exclusively on conditions within the WUI ignores the scale of wildfire risk transmission (Ager et al., 2017), which is important both because of the larger landscape context and contrasting organizational stances towards wildfire risk (Steelman, 2016). By defining the WUI according to both the biophysical and built factors of communities and their surrounding landscape, we have provided an expanded definition of WUI that supports efforts to link the biophysical and social factors that underlie wildfire risk exposure (Ager, Kline, & Fischer, 2015; Moritz et al., 2014; Spies et al., 2014). Our results make clear that aspects of exposure vary greatly both within and among communities. From the perspective of federal land managing agencies, this expanded definition provides specific guidance over where and how federal dollars are best spent, and points to opportunities for drafting agreements between communities, private landowners, and state or federal land managers that can better leverage their mutual interests (Fig. 5).

4.4. Limitations and future research

Geographic inventories of development and infrastructure fail to address the institutional and social dimensions of communities that define their capacity to anticipate, prepare for, and mitigate wildfire hazards (Fischer, Vance-Borland, Jasny, Grimm, & Charnley, 2016; Spies et al., 2014). Individual communities are likely to establish different strategies for planning, mitigating, and recovering from wildfire (Paveglio et al., 2015), and many of these will be tied to their geographic and social context, their understanding of ecosystems processes, and their relationship with federal agencies (Paveglio, Carroll, Stasiewicz, Williams, & Becker, 2018). Additional data on community willingness and capabilities to mitigate wildfire risk need to be brought into the process of adapting to wildfire (Fischer, Spies, et al., 2016; Nielsen-pincus, Ribe, & Johnson, 2015). Combining biophysical and social archetypes is an important next step in future research in addition to the integrated management of fire systems (Ager et al., 2015).

The scope of this analysis was limited to national forests to address the immediate policy void concerning expanded fuels funding appropriated to the USFS, but as a result, it excluded exposure originating outside of the national forest system, such as fires igniting within community boundaries, or on other private, state, or other federally managed lands. The risk of community wildfire exposure is limited for most national forests, and focusing management on source areas where wildfire exposure originates will have the greatest impact on reducing community wildfire risk. Still, wildfire transmission from national forests into communities represents only a portion of the total fire exchanged among the land tenures most common to the western US (Ager et al., 2017). For instance, highly-exposed communities were notably absent from Colorado within our study, which indicates that community risk in the state is more likely to come from other land tenures. An expansion of our analysis to all lands is necessary to understand the nature of wildfire exposure across all communities in the western US. As a final point, the scale at which we examined community exposure (i.e., the entire western US) meant that we did not describe the mapped extent of source and exposure areas in detail. This is likely to be a task better suited for smaller scales of study, such as in those regions where community wildfire exposure was spatially concentrated. Defining the specific spatial extent of source and exposure areas within these regional exposure ‘hotspots’ is a clear direction for future work.

While this analysis was specific to the western US, the implications of our work are germane to other fire-prone regions globally. As more fire-prone regions incorporate detailed maps of the WUI into wildfire risk mitigation programs (e.g., Bowman et al., 2011; Lampin-Maillet et al., 2010), it is important that those mitigation programs be implemented in a way that does not artificially “flatten” the complex social and biophysical context that underlies wildfire risk. The diversity of conditions we reported is likely true for other contexts globally, and since the increased risk of wildfire found in many fire-prone regions will likely outstrip available resources, it is critical that mitigation actions be tied to a cohesive risk management strategy that accommodates diversity and scale.

5. Conclusion

The risk planning problem faced by land and fire management agencies across the globe involves a diversity of local contexts. Given the scale of the wildland urban interface in the western US, along with changes in fire activity expected from a changing climate, the need to strategically plan and implement mitigation actions at a landscape scale is critical. Hazardous fuel investments can be rendered ineffective given the convoluted process of appropriating funds, distributing money, tying investments to existing programs and planning efforts, and implementing them on the ground. Community exposure archetypes constructed on an expanded definition of the WUI that explicitly considers the scale and process of wildfire exposure can help match national wildfire policy to the diversity of local community contexts.

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January 5, 2018

Dan Silver, Executive Director
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SUBJECT: REVIEW OF BIOLOGICAL RESOURCE ISSUES VEGETATION TREATMENT PROGRAM ENVIRONMENTAL IMPACT REPORT, CALIFORNIA BOARD OF FORESTRY AND FIRE PROTECTION

Dear Mr. Silver,

The California State Board of Forestry and Fire Protection (Board) proposes to initiate a Vegetation Treatment Program (VTP). The VTP would be part of a comprehensive fire prevention strategy from the Board implemented by the Department of Forestry and Fire Protection (Cal Fire). On behalf of the Endangered Habitats League, Hamilton Biological, Inc., has reviewed the Draft Program Environmental Impact Report for the proposed VTP, hereafter referred to as the "DEIR." A version of the DEIR was initially circulated in 2016, but pursuant to CEQA Guideline 15088.5 the document was recirculated in November 2017 to incorporate "additional data and significant clarifying information."

Hamilton Biological, Inc., is a consultancy specializing in field reconnaissance, regulatory compliance, preparing CEQA documentation, and providing third-party review of CEQA documentation. Please refer to the attached curriculum vitae.

STANDARDS FOR ADEQUACY OF AN EIR

Section 15151 of CEQA states:

> An EIR should be prepared with a sufficient degree of analysis to provide decisionmakers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

As explained in these comments, the DEIR lacks the level of current, relevant biological information required for decisionmakers to intelligently take into account the environmental consequences of the proposed actions.

CEQA MITIGATION REQUIREMENTS

Section 15126.4 of CEQA discusses the requirements for mitigation measures in a CEQA document, including:

> An EIR shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy.
>
> The discussion of mitigation measures shall distinguish between the measures which are proposed by project proponents to be included in the project and other measures proposed by the lead, responsible or trustee agency or other persons which are not included but the lead agency determines could reasonably be expected to reduce adverse impacts if required as conditions of approving the project. This discussion shall identify mitigation measures for each significant environmental effect identified in the EIR.
>
> Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified. Formulation of mitigation measures should not be deferred until some future time. However, measures may specify performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way.
>
> Mitigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding instruments. In the case of the adoption of a plan, policy, regulation, or other public project, mitigation measures can be incorporated into the plan, policy, regulation, or project design.

As discussed later in these comments, the DEIR's mitigation measures for biological resources fail to satisfy these basic CEQA requirements.

EXPECTATIONS OF THE PROGRAMMATIC EIR

Section 15168 of CEQA lists the following advantages of preparing a programmatic EIR:

(1) Provide an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action.

(2) Ensure consideration of cumulative impacts that might be slighted in a case-by-case analysis.

(3) Avoid duplicative reconsideration of basic policy considerations.

(4) Allow the lead agency to consider broad policy alternatives and program wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts.

(5) Allow reduction in paperwork.

The DEIR falls far short of these expectations. In particular, the EIR preparer has not provided "more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual action." Treatment of cumulative impacts is completely inadequate, and the identified mitigation measures are vague and unenforceable. The overall approach of the document is to skip past the difficult job of analyzing the full range of potentially significant biological effects attendant to a project that involves disturbing up to 60,000 acres of natural lands per year, for ten years, and to focus instead upon describing the relatively limited slate of generic actions that project implementation would entail. Such an approach, while appealingly streamlined, is inconsistent with CEQA's mandate to identify all of the potentially significant effects of a proposed action and to identify all feasible mitigation measures necessary to reduce those impact to a level less than significant.

DEIR Supports Dangerous Development Patterns

Page E-2 of the DEIR states:

> Wildfire acreage in California increases with prolonged drought and extreme weather conditions (e.g., Santa Ana winds), and the amount of housing within the highest wildfire hazard severity zone (very high) is expected to grow from 640,000 units to over 1.2 million units by 2050 (Mann, 2014).

And:

> These future climate scenarios combined with continuing projections of residential growth into the wildland (Mann et al., 2014) suggest that existing wildfire-related problems are poised to become even larger in the near future.

Page 2-5 of the DEIR states:

> Fire behavior is the way fire reacts to weather, topography, and fuels (NWCG, 2014). Of the three variables, only fuels can be feasibly altered by humans. The primary assumption of the VTP is that appropriate vegetation treatments can affect wildland fire behavior through the manipulation of wildland fuels. Since human activity cannot influence weather or topography, reducing the continuity of wildland fuels would result in lower fuel hazard and more favorable fire behavior. In turn, this would allow for more effective fire suppression and, therefore, reduce the likelihood of wildfire adversely affecting values at risk. Values at risk include, but are not limited to, public and firefighter health and safety, structures, infrastructure, timber and environmental services (e.g., biodiversity, clean water, carbon sequestration, etc.), rangelands, and other natural resources. Ten of the most destructive fires in California have occurred since 2010 (see Figure 2.2-2); through the strategic placement of WUI, fuel break, or ecological restoration treatments, subsequent activities implemented under the VTP will help to reduce losses to life, property, and natural resources.

The DEIR accepts as inevitable the dangerous and irresponsible expansion of housing into California's highest wildfire hazard severity zones, and yet fails to observe that humans have much more control over the methods used to build structures in fire-prone areas than we have over wildfires. Nothing in the DEIR acts as a disincentive to building new houses within the highest wildfire severity zone, or requires any would-be developer to use only the least-flammable feasible construction methods (both of which would temper the need for extensive fuel-reduction actions). Instead, the DEIR prescribes the disturbance and degradation of **600,000 acres of natural communities**, over a period of ten years, in part to facilitate expansion of housing into extremely hazardous areas that will only become more so as the climate warms and dries.

These comments examine numerous specific aspects of the DEIR that fail to satisfy CEQA's most basic requirements, but it is this unstated philosophical underpinning — i.e., that the Board and Cal Fire have a legitimate mandate to accommodate and facilitate the projected doubling of housing built within the state's most hazardous areas under increasingly warm and dry climatic conditions — that represents the VTP's most insidious threat to the citizens of California and to the ecological integrity of our irreplaceable natural landscapes.

AN ORWELLIAN TAKE ON "ECOLOGICAL RESTORATION"

As described in the Program Description, over a ten-year period, the VTP would achieve its fuel-reduction goals through manipulations of 600,000 acres of existing vegetation (a) along the wildland-urban interface (WUI), (b) within new fuel breaks, and (c) through a process that the DEIR euphemistically refers to as "ecological restoration." Page 2-16 defines this term:

> Ecological Restoration is the process of re-establishing the composition, structure, pattern, integrity and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions.

This is not close to the actual definition of "ecological restoration." According to the Society for Ecological Restoration (2004), "Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed." The meaning of the term was further explained in the Society's *International Standards for the Practice of Ecological Restoration – Including Principles and Key Concepts* (McDonald et al. 2016, pp. 9-10; emphases in bold font in the extended quote are mine):

> A fundamental distinction between ecological restoration and other forms of ecosystem repair is that ecological restoration seeks to 'assist recovery' of a natural or semi-natural ecosystem **rather than impose a new direction or form upon it**. That is, the activity of restoration places an ecosystem on a trajectory of recovery so that it can persist and its species can adapt and evolve.
>
> The Standards recognize that the same term 'ecological restoration' is commonly used to describe not only a process (i.e., an activity undertaken for a given set of goals), but also the outcome sought for an ecosystem (i.e., its recovery). Favoring the term recovery for the latter, these Standards define as an ecological restoration activity any activity whose aim it is to ultimately achieve ecosystem recovery, insofar as possible and relative to an appropriate local native model (termed here a reference ecosystem), regardless of the period of time required to achieve the recovery outcome. A reference ecosystem is a model representing the approximate restoration target (see also Key Concept 1 below). In the absence of suitable intact ecosystems of the same type surviving close to the targeted site, the reference model can be derived from multiple sources of information about past and present biota and conditions occurring on or near the site; supplemented by information on anticipated changes in environmental conditions that may lead to altered biological assemblages. Levels of recovery sought and achieved should be identified in a restoration project's plans and reports, respectively. **Full recovery is defined as the state or condition whereby all the key ecosystem attribute categories closely resemble those of the reference model.** Where only lower levels of recovery are possible despite best efforts, the recovery would be referred to as partial recovery, although it is reasonable to expect that any project would need to aspire to

> substantial recovery of the native biota of the reference ecosystem for it to qualify as an ecological restoration project. When full recovery is the target, an important benchmark is when the ecosystem demonstrates a condition of self-organization and is on a trajectory to reach full recovery as defined above. If and when the selforganizing stage is reached, ongoing monitoring and, potentially, some further intervention may be required to ensure that the trajectory of recovery ultimately converges with full recovery and is not deflected off course by unexpected factors. If full recovery has been achieved but ongoing interventions (e.g., removal of invasive species, or application of disturbance regimes) are needed to ensure desirable states are maintained, these interventions would be considered ecosystem maintenance. The process of ecological restoration and its outcome of recovery are synergistically linked. That is, if the desired restoration outcomes are identified from the start (using processes described in Section 3 including collaboration with stakeholders) then they can help identify and direct the optimal restoration process.
>
> **The reference ecosystem, in particular, will help in planning, monitoring and evaluating ecological restoration work.** Similarly, where outcomes are uncertain, applying appropriate processes through adaptive management and ongoing stakeholder interaction will help the project team arrive at satisfactory outcomes. Projects that focus on the recovery of single species (e.g., threatened species or highly mobile faunal species with large minimum range sizes) are generally considered highly valued components of larger ecological restoration projects or programs. Projects that focus solely on reinstating some form of ecosystem functionality without seeking to also recover a substantial proportion of the native biota found in an appropriate native reference ecosystem would be best described as rehabilitation.
>
> Importantly, if such a project were to improve the state of the environment without compromising potential for future ecological restoration it would also be considered a restorative project – i.e., part of a continuum of activities improving potential for ecological recovery at larger scales (see Section 4).

The intensive landscape manipulations called for in the DEIR would not "assist the recovery of an ecosystem that has been degraded, damaged or destroyed" to "a condition whereby all the key ecosystem attribute categories closely resemble those of the reference model." Rather, these manipulations are plainly intended to "impose a new direction or form" upon existing native and naturalized plant associations. For these fundamental reasons, the proposed habitat manipulations cannot be legitimately characterized as a form of "ecological restoration."

Furthermore, the DEIR's novel definition — "the process of re-establishing the composition, structure, pattern, integrity and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions" — is entirely subjective, non-quantitative, and unenforceable, and therefore meaningless as a policy prescription.

As stated in Table 2.5-5 on page 2-34, the fuel-reduction activities that would be carried out under the name of "ecological restoration" consist of the following:

1. **Prescribed Fire: Pile Burn.** Application of fire to an intentionally concentrated pile of fuels to accomplish planned resource management objectives. The method is to "Pile and burn fuels."
2. **Prescribed Fire: Broadcast Burn.** Application of prescribed fire to fuels to accomplish planned resource management objectives under specified conditions of fuels,

weather, and other variables. The method is described as "Understory burn within timber or oak woodlands, or broadcast treatment using fire with a control line along the perimeter."

3. **Mechanical.** Use of motorized equipment designed to cut, uproot, crush/compact, or chop existing vegetation. The method is described as "Masticating, chipping, brush raking, tilling, mowing, roller chopping, chaining, skidding and removal, piling, often combined with pile burning."
4. **Manual.** Use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species. The method is to "Hand pull and grub, thin, prune, hand pile, lop and scatter, hand plant, often combined with pile burning."
5. **Prescribed Herbivory.** Intentional use of domestic livestock to reduce a targeted plant population to an acceptable level and/or reducing the vegetative competition of a desired plant species. The method involves "Grazing or browsing by cows, sheep or goats."
6. **Herbicides.** Chemical applications designed to inhibit growth of vegetation. The method involves "Ground applications only, such as backpack spray, hypo-hatchet, pellet dispersal, etc."

These may be valid ways of reducing fuel loads and fire hazards, and some of these methods are used, very judiciously, in legitimate ecological restoration projects, but nothing in the DEIR suggests that the Board and Cal Fire have any plans to conduct true ecological restoration projects across tens or hundreds of thousands of acres of wildlands, most of which presumably already support natural communities that have no need to be "restored" in the first place.

Case Study: Oak Woodland Fuel Reduction in Santa Barbara

I participate annually in the National Audubon Society's Christmas Bird Count in Santa Barbara. For many years, I have covered the same area in Hope Ranch. In late 2011, a resident living on top of a hill vegetated with the area's densest oak woodland hired a crew to conduct fuel reduction for a distance of 425 feet down the hillside below their home.

The crew used hand tools and hand-operated power tools to cut, clear, and prune the understory and thin the oak canopy. At the time, it was clear to me that these actions — which apparently would qualify as "ecological restoration" per the DEIR — could only increase the fire danger on this hillside, which had a dense shrubby understory and was consistently moist and fully shaded by the closed oak canopy. Exhibits 1 and 2, on the next page, show the "before" and "after" cleared area in 2003 and in 2017. Exhibits 3 through 7 show that fuel modification has caused the understory to be replaced by a dense cover of dried non-native annual weeds far more flammable than the pre-project perennial understory.

Exhibit 1. Aerial photo dated October 2003 showing in yellow the area of oak woodland later cleared, in December 2011. In 2003, the oak overstory on this entire hillside was intact, with a woody understory composed of native and non-native species (R.A. Hamilton, pers. obs.). Source: Google Earth Pro.

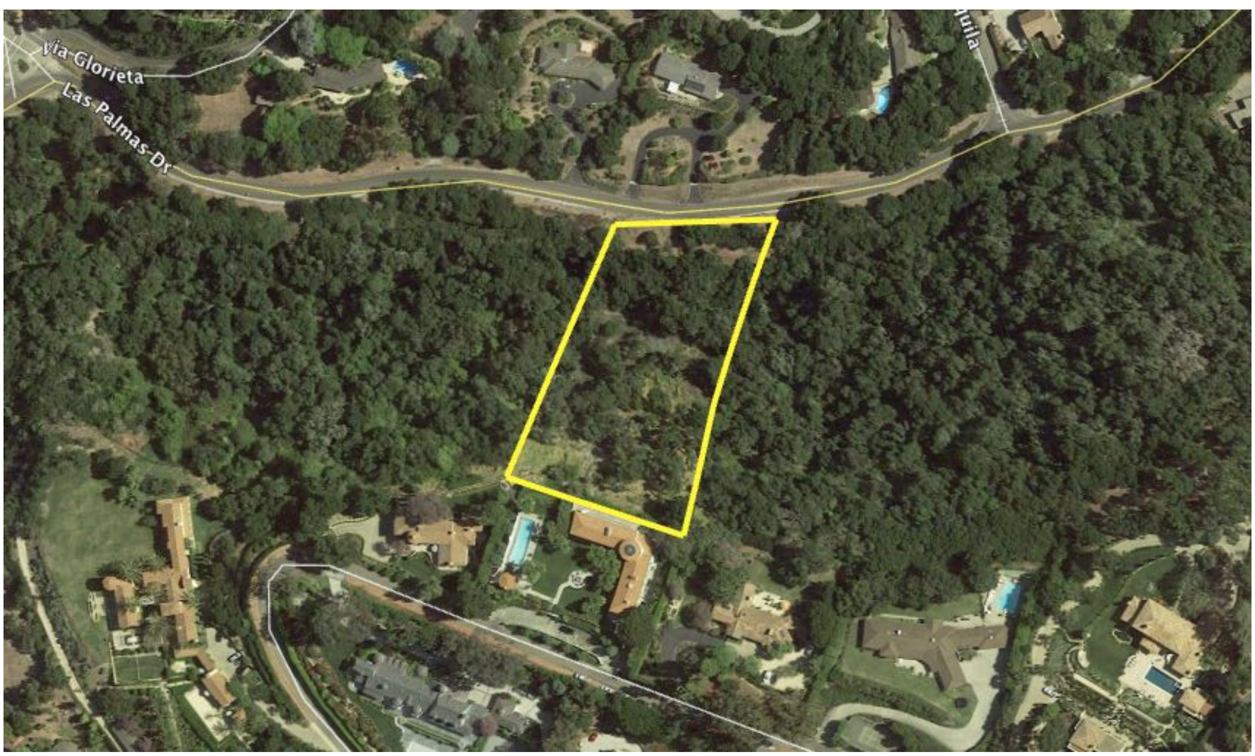

Exhibit 2. Aerial photo dated June 2017 showing in yellow the same area of oak woodland six years after it was subjected to "fuel reduction" in December 2011. The canopy is now largely open, with an understory composed of exotic annual weeds. Source: Google Earth Pro.

Exhibit 3. December 31, 2011, immediately after fuel reduction clearing. Remnants of moist native and non-native perennial understory are visible in this view.
Robert A. Hamilton.

Exhibit 4. December 31, 2011, immediately after clearing of perennial understory and thinning of oaks. At this initial stage, the ground was largely bare except for oak leaf litter.
Robert A. Hamilton.

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Exhibit 5. December 30, 2017, six years after initial fuel reduction clearing. The remnants of native and non-native perennial understory have been replaced by a dense cover of dried non-native annual weeds far more flammable than the pre-project perennial understory. *Robert A. Hamilton.*

Exhibit 6. December 30, 2017, six years after initial fuel reduction clearing. The formerly closed oak canopy is now open, with much lower biological value and higher risk of catching fire than before treatment. *Robert A. Hamilton*.

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Exhibit 7. December 30, 2017. Showing the current condition of the oak woodland habitat immediately adjacent to the cleared area. This land owner is also, unfortunately, starting to clear the perennial understory beneath this patch of oak woodland.
Robert A. Hamilton.

The ecologically degrading and fire-promoting approach to "fuel reduction" at this property in Hope Ranch appears to be consistent with the "Manual" approach to "ecological restoration" and "wildland-urban interface" treatments identified in the DEIR. Especially with certification of the DEIR, the remaining dense oak woodland in this canyon may soon become similarly degraded, as part of the 600,000 acres of fuel-reduction actions outlined in the plan. Nothing in the DEIR appears to provide a reliable safeguard against this type of counterproductive and ecologically damaging undertaking. To prevent such an unacceptable outcome, the EIR must provide a much more rigorous and scientifically validated evaluation of all of the relevant impacts.

Incomplete Discussion of Land Management Regulation

Page 4-6 of the DEIR reviews Land Management Regulation in California, including federal, state, and local regulations. Remarkably, however, the document fails to mention regulation of land management across large areas of natural habitat under the Natural Communities Conservation Plan (NCCP). The NCCP program involves federal, state, and local administration, and each approved NCCP includes a scientifically developed fire management strategy developed expressly to balance the mandate to conserve fire-prone natural communities while simultaneously protecting public safety and property.

The DEIR is inadequate in its failure to (a) discuss land management regulations within various NCCP subregions; (b) explicitly review and evaluate resource-protective fire-management strategies that have been developed and adopted under the NCCP framework; and (c) incorporate NCCP-derived fire-management strategies into the DEIR.

DEIR's Treatment of the Affected Environment

Page 4-142 states:

> The bioregion was determined to be the appropriate scale to analyze the impacts of the proposed program. A focused analysis at the scale of the individual project ("subsequent activity") is required by the Project Scale Analysis (see Appendix J) prior to implementing an individual treatment under the proposed Project.

Appendix J, however, is nothing more than a checklist that lists a few possible mitigation measures for each environmental resource (e.g., soils, water, wildlife). Appendix J is deeply flawed and deficient in many ways, some of which are discussed below.

Appropriateness of Seeding as Mitigation

Appendix J refers repeatedly to seeding as a form of mitigation for various fuel-reduction treatments:

- **Page J-4:** Areas where high intensity fire destroys seed stock or adversely alters soil structure will be seeded afterward with herbaceous species.
- **Page J-6:** Area will be drill-seeded with herbaceous species on contour in the Fall to reduce surface flow.
- **Page J-7:** Landowner to re-seed if regeneration not apparent after burn, or if burn vegetation loss is greater than desired.
- **Page J-8:** Area will be re-seeded if regeneration not apparent after burn, or if burn vegetation loss is greater than desired.
- **Page J-9:** Landowner will seed with large seed-producing forbs to replace lost forage seed mast.
- **Page J-9:** The area will be seeded with a variety of forbs to enhance the ground cover and available wildlife forage (include in Cost-Share description).
- **Page J-11:** Twenty percent of the area will be replanted with grasses and forbs to restore wildlife habitat.

Given the DEIR's repeated specification of seeding as mitigation for potentially significant impacts of the project, and the document's failure to disclose any potential adverse effects from seeding, readers would naturally assume that seeding is known to be effective and appropriate as a treatment of burned landscapes. And yet the opposite is true. For example, Peppin et al. (2010) conducted an evidence-based systematic review of post-fire seeding literature (94 studies) to examine the effectiveness and effects of post-fire seeding treatments on soil stabilization and plant community recovery in the western United States. Page 3 of their report summarizes their key findings:

> As sampling designs have become more rigorous in recent years, evidence that seeding is effective in reducing erosion has decreased. Of the 27 papers evaluating soil erosion, none of the 16 papers published since 2000 concluded that seeding was effective or minimally

> effective in reducing erosion compared to controls, whereas 64% of 11 papers published before 2000 found seeding to be in those categories. Only 9% of earlier papers met the criteria for highest or high quality evidence, while 71% of papers since 2000 did. Seeding did not reduce erosion relative to unseeded controls in the majority (78%) of the 30 sites contained in 9 papers providing direct measures of sediment yield. Even when seeding significantly increased vegetative cover, seeded sites rarely supported sufficient plant cover to stabilize soils within the first and second year post-fire. Of the papers evaluating seeding effectiveness for curtailing invasions of non-native plant species (11 papers), an almost equal percentage found seeding treatments to be effective (54%) or ineffective (45%). However, 83% of the treatments regarded as effective used nonnative species such as grasses and cereal grains. A majority (60%) of studies reported that seeding suppressed recovery of native plants, although data on long-term impacts of this reduction are limited.

Thus, careful review of the best available science shows that seeding generally is not effective as a post-fire erosion-control measure, and that it is known to suppress post-fire recovery of native plants in many instances.

Peppin et al. (2011) reviewed the costs and potential effects of post-fire seeding. They observed that, despite a growing recognition of the importance of using appropriate, locally native species in seeding projects:

> … high costs and restricted availability, especially in high-severity fire years, often limit inclusion of native plants in post-fire seeding. Instead, the recognised competitive ability of non-native and some native grass cultivars, coupled with their abundant availability and relative low costs, have resulted in continued seeding with these species (Peppin et al. 2011:703).

Furthermore:

> Increased large-scale production and use of native species have given rise to questions as to whether many natives are genetically appropriate for areas seeded (Smith et al. 2007). It has been speculated that seeding with non-local genotypes of native species may have long-term genetic consequences on local plant communities due to out-breeding effects (Linhart 1995; Montalvo and Ellstrand 2001); however, there is very little quantitative information addressing these issues. Furthermore, few studies have investigated the use of native species to meet post-fire management objectives related to soil erosion and non-native species invasion (Peppin et al. 2010). The lack of basic information underscores the importance of further research to determine the short- and long- term effects of seeding with native species following fire. Additionally, care must be taken to ensure that seed mixes are free of non-native seed (Peppin et al. 2011:705).

They concluded:

> The success of post-fire seeding treatments in achieving specified rehabilitation objectives remains uncertain, yet millions of dollars continue to be spent annually on post-fire seeding. The ecological risks and economic costs imposed by seeding may be lessened through use of alternative rehabilitation methods shown to be more effective (e.g. mulching) and prioritisation of burned areas seeded to those immediately threatened by soil erosion and invasion of non-native species (Peppin et al. 2011:707).

Without citing any of this highly relevant research calling into question the efficacy and ecological appropriateness of seeding, and identifying the importance of strictly limiting any such seeding to appropriate, locally native species, the DEIR specifies generic seeding in seven different mitigation measures. The DEIR establishes no processes for formulating appropriate seed mixes, provides no performance standards for seeding efforts, and makes no allowances for monitoring outcomes. The potentially significant adverse effects of seeding, so clearly identified in the scientific research summarized by Peppin et al. (2010, 2011), are not acknowledged in the DEIR.

Mitigation Measures in Appendix J are Vague and Unenforceable

Appendix J is overly vague and **does not** require focused analysis as suggested in the DEIR. Indeed, it is unclear how Appendix J would be implemented. For example, under "Vegetation" page J-7 lists four possible types of mitigation for potential impacts:

___ No more of the project area will be burned than is necessary for fire safety, as determined by the CAL FIRE Regional Chief.

___ Areas of the project have been reserved for summer or fall burning to allow propagation of herbaceous plants.

___ The burn is located on ridge tops and/or canyon bottoms to minimize impacts to wildlife habitat.

___ The project will be burned in a pattern to create and maintain a mosaic of old and young growth with diverse habitat structure.

Would all four measures be required for each project, or only a subset, or are these simply measures for Cal Fire to contemplate? Do they simply check the boxes in the Appendix, or is written analysis needed to ensure proper attention to each measure?

Examining the mitigation measures in Appendix J reveals several problems. At the most basic level, the DEIR fails to acknowledge that large, mature oak trees require 60 to 80 years to develop (California Wildlife Habitat Relationships System 2005). Large, mature oak trees are especially important to wildlife because they provide key structural elements and characteristics (e.g., cavities, caching sites, and suitable substrates for raptor nests, among others) that are unavailable in smaller trees (CalPIF 2002). Thus, if burning destroys large, mature trees, there would be a lag time of 60-80 years to replace lost habitat elements. This is a potentially significant impact that cannot be mitigated and that must be acknowledged in the DEIR.

Examining each of the four potential mitigation measures listed above, the first states: "No more of the project area will be burned than is necessary for fire safety, as determined by the CAL FIRE Regional Chief." Burning more area than necessary for fire safety would conflict with the overall Project purpose, so this is an artificial mitigation measure.

The second measure states, "Areas of the project have been reserved for summer or fall burning to allow propagation of herbaceous plants." This sounds good, but page 4-56 of the DEIR notes that firefighters are typically too busy fighting wildfires in summer and fall to conduct prescribed burns during this period:

> The resource drawdown that is typically occurring at these times to fight fires in California and elsewhere, plus the higher fire risk throughout the state, typically does not leave resources available to perform these high severity prescribed fires.

The third measure states, "The burn is located on ridge tops and/or canyon bottoms to minimize impacts to wildlife habitat." The DEIR provides no evidence or analysis that ridge tops and/or canyon bottoms provide lower quality wildlife habitat, provide habitat for fewer species, etc.

The fourth measure states, "The project will be burned in a pattern to create and maintain a mosaic of old and young growth with diverse habitat structure." This sounds reasonable, in theory, but this measure is too vague to ensure that vegetation would be protected. For example, at what landscape scale would the mosaic occur? What would be the patch size? Would patches be connected? These principles of landscape ecology influence habitat quality and wildlife use and unless the measure elaborates on the specific burn technique there is no assurance that resources would be protected.

Furthermore, some of the mitigation measures are not appropriate. For example, page J-8 poses the question: "Will burning in summer or fall cause a significant loss of wildlife habitat and/or damage to oak woodlands?" The DEIR provides no metrics or methods by which to objectively define "significant loss of wildlife habitat," and does not identify the personnel qualified to make such a determination. If the person filling out the checklist answers "yes", mitigation measures are potentially required:

1. Area will be re-seeded if regeneration not apparent after burn, or if burn vegetation loss is greater than desired.

As discussed at length on page 11 of these comments, the DEIR ignores the many scientific investigations that call into question the basic efficacy and appropriateness of seeding as a useful mitigation response in this or other fuel-reduction situations. With that important caveat, this measure is too vague to ensure that impacts would be reduced to less-than-significant levels. For example, does "regeneration" refer to oaks or other species? The DEIR provides no standards for distribution and abundance of regeneration, nor a timeline for the assessment, making implementation of this mitigation measure subjective and uncertain. Furthermore, even if regeneration is apparent, there are no performance standards for regeneration, and no requirements for monitoring to ensure regeneration is successful.

2. Burn will maintain islands and strips of chaparral to provide thermal protection and escape cover for wildlife.

The DEIR does not explain how maintaining strips of chaparral would mitigate impacts to oak woodland habitat. Even if chaparral were to provide thermal protection and escape cover for oak woodland species, which it does not, this measure would not address other critically important habitat requirements, such as food, reproductive sites, and the occurrence of logs, which provide important habitat for many native fungi, invertebrates, reptiles, and amphibians.

Notwithstanding the vague requirements of the mitigation measures, the DEIR does not incorporate monitoring to verify that the mitigation measures in Appendix J would achieved their intended goals. Similarly, the DEIR fails to establish a remedial action plan if the goals are not achieved. For example, a wildlife mitigation measure on page J-9 specifies creation of a mosaic with diverse habitat structure, but without monitoring to verify the creation of a mosaic, and no discussion of what Cal Fire would do if the treatment fails to achieve the desired mosaic, the measure has no practical efficacy.

Several of the mitigation measures for impacts to wildlife include "recommendations" from the California Department of Fish and Wildlife (CDFW) and US Fish and Wildlife Service (USFWS), not *requirements*. Implementation of the recommendations appears to be at the discretion of Cal Fire. Thus, even if CDFW and /or USFWS provide appropriate mitigation measures, the DEIR can provide no assurances that those measures would be implemented. Thus, mitigation measures involving CDFW/USFWS recommendations cannot be used as evidence that potentially significant impacts to wildlife would be mitigated.

INADEQUATE CHARACTERIZATION OF VEGETATION RESOURCES

Section 15125(a) of CEQA states:

> An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant.

Section 15125(c) of CEQA states:

> Knowledge of the regional setting is critical to the assessment of environmental impacts. Special emphasis should be placed on environmental resources that are rare or unique to that region and would be affected by the project. The EIR must demonstrate that the significant environmental impacts of the proposed project were adequately investigated and discussed and it must permit the significant effects of the project to be considered in the full environmental context.

A Manual of California Vegetation (Sawyer et al. 2009) forms the basis for the State of California's *List of Vegetation Alliances and Associations* (California Department of Fish and Game 2010). The Introduction to *A Manual of California Vegetation* states:

> An early objective of the Committee was to foster adoption of a uniform vegetation classification among private, state, and federal resource agencies with jurisdiction over land management. At that time, several conflicting systems were being used, making it difficult for biologists to communicate. The adoption of a common classification allows conventions, descriptions, and names to be consistent. A uniform vocabulary permits a longer-term objective to be met, the legislative recognition and protection of rare, threatened, or endangered plant communities across administrative boundaries.
>
> By developing quantitative, defensible definitions of rare and threatened communities, we can invoke the California Environmental Quality Act (CEQA) to help conserve them. CEQA

> specifically calls for the preservation of examples of plant and animal communities within the state. Before working with rare and threatened communities, we need to create a systematic classification of all communities, including the common and extensive, as well as the rare ones.

The *List of Vegetation Alliances and Associations* specifies the sensitive plant alliances and associations of interest to the California Natural Diversity Data Base (CNDDB), as well as State and Global sensitivity rankings (http://www.natureserve.org/conservation-tools/conservation-status-assessment):

> This method assesses the conservation status of species and ecosystems–specifically the extinction risk of species and elimination risk of ecosystems at global scales, and their extirpation risk at national and subnational scales. NatureServe and Natural Heritage Program staff across North America collect and evaluate data for species and ecosystems of concern using these methods and tools to ensure that assigned status ranks are accurate and consistent, based on current field and remote sensing information.
>
> Conservation status assessments are completed to produce *conservation status ranks* that measure extinction or extirpation risk at three geographic scales: global, national, and subnational. Global, National, and Subnational Ranks (or "G-Ranks," N-Ranks" and "S-Ranks") are widely used throughout the conservation community and are regarded as highly credible by scientists, government agencies and private-sector organizations. These assessments are also a valuable resource for government agencies responsible for administration of Federal, state and provincial species conservation laws.

Because the DEIR fails to adhere to the State's own classification system, the document fails to identify the vegetation alliances and associations that the State recognizes as having special regulatory status. Failure to identify these special-status resources in the Setting precludes the possibility of conducting an adequate CEQA impact analysis. See the following examples.

Oak Woodland

The State of California's *List of Vegetation Alliances and Associations* identifies 13 oak alliances divided into 66 associations. Five of the alliances are of high priority for inventory in the CNDDB, and are given Global or State sensitivity of G3/S3 or higher. Fifteen of the oak associations are identified as being of high priority for inventory in the CNDDB.

Despite the diversity and ecological importance of California's oak associations and alliances, and the CEQA regulatory status of some of these resources, page 4-26 in the DEIR devotes a mere three paragraphs to describing oak woodlands, and inexplicably does so under the heading of "Annual Grasses." The DEIR's failure to identify and describe those oak alliances that are of high priority sets the stage for the document's failure to evaluate the Project's potential impacts to these important resources.

Perennial Grasslands

The State of California's *List of Vegetation Alliances and Associations* identifies 65 grassland alliances divided into 172 associations. Thirty-one of the grassland alliances, most of them perennial grasslands, are given Global or State sensitivity of G3/S3 or higher.

Fifty-five of the grassland associations, most of them perennial grasslands, are identified as being of high priority for inventory in the CNDDB.

Despite the diversity and ecological importance of California's perennial grasslands, and the regulatory sensitivity of some of these resources, page 4-26 in the DEIR dismisses perennial grasslands in a single sentence:

> Perennial grasses, found in moist, lightly grazed, or relic prairie areas, include purple needlegrass and Idaho fescue (DFG, 1988).

As with oak woodlands, the DEIR's grossly inadequate treatment of perennial grasslands essentially guarantees that the impact and mitigation sections cannot adequately quantify and analyze the project's potential adverse effects on these important natural resources.

Achieving CEQA Adequacy in Characterizing Vegetation Resources

As discussed previously, Section 15125(C) of CEQA states, "Special emphasis should be placed on environmental resources that are rare or unique to that region and would be affected by the project." To achieve CEQA adequacy, a programmatic EIR evaluating the ecological effects of disturbing 600,000 acres of natural habitats must utilize the State's own *List of Vegetation Alliances and Associations*, which includes the CNDDB's sensitivity rankings, to characterize the vegetation communities that would be potentially impacted by the project within the proper regulatory context. The DEIR's failure to do so clearly renders it inadequate as a CEQA document.

INADEQUATE AND INAPPROPRIATE THRESHOLDS OF SIGNIFICANCE

Page 4-182 of the DEIR identifies the following thresholds of significance:

> For the purpose of this PEIR, the following thresholds are used to determine whether there is a significant effect to botanical, wildlife, aquatic and invasive species or resources as a result of implementation of treatments under the program or any of the alternatives. A significant effect occurs when there is a:
>
> a) Threat to eliminate a plant community.
>
> b) Violation of any state or federal wildlife protection law.
>
> c) Contribution either directly (through immediate mortality) or indirectly (through reduced productivity, survivorship, genetic diversity, or environmental carrying capacity) to a substantial, long-term reduction in the viability of any native species or subspecies at the bioregion scale.
>
> d) Adverse effect, either directly or through habitat modification, on any species identified as a special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS.
>
> e) Net effect in a local subsequent activity area was a substantial increase in the population of invasive species AND this occurred on over 10 percent of a WHR lifeform in a bioregion.
>
> f) Creation of a public nuisance.

Most of these thresholds of significance are so vague and subjective as to be impossible to implement. Thresholds "a", "c", and "e" are set so impossibly high as to undermine the very purpose of CEQA, whereas threshold "d" is so all-encompassing as to be equally meaningless.

Overly Lenient Thresholds

As indicated above, three of the thresholds appear to be overly lenient and lacking any scientific justification. No rationale is given for setting the threshold of significance at the complete elimination of a plant community across some unspecified geographic area (threshold "a"), or for setting the threshold at the "substantial, long-term reduction in the viability of any native species or subspecies at the bioregion scale (threshold "c"), or for setting it at the level of "a substantial increase in the population of invasive species over 10 percent of a WHR lifeform in a bioregion (threshold "e").

Setting thresholds of significance impossibly high undermines a primary function of the CEQA review process, which is to conserve plant and wildlife populations before collapse of their local or regional populations. For example, one could not honestly argue that actions likely to undermine the viability of a species' entire population across the coastal slope of southern California would be less than significant, simply because populations remained in northwestern Baja California (i.e., within the southern part of the Californian Bioregion).

Furthermore, these overly lenient significance thresholds lack any practical application because the DEIR (a) does not contain any viability analysis, (b) does not discuss how viability was or could be assessed, and (c) fails to incorporate a monitoring program for tracking change in abundance of invasive species, meaning that personnel would have no practical way of knowing if/when these thresholds might be triggered. Indeed, the document fails to provide even the most basic information on baseline conditions associated with each special-status species potentially impacted by the proposed actions.

Unrealistically Strict Threshold

Page 4-183 sets a threshold of significance at any "Adverse effect, either directly or through habitat modification, on any species identified as a special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS." Since nearly any large-scale manipulation of natural habitat has potential to result in adverse effects upon one or more special-status species, any sincere effort to apply this threshold would clearly yield a conclusion that virtually any and all actions proposed in the DEIR involve potentially significant impacts to one or more species. Given, however, that the DEIR fails to identify **any** potentially significant impacts to biological resources associated with proposed impacts to 600,000 acres of natural habitat over ten years, and considering that three of the other thresholds are set so high as to be practically unattainable and/or unprovable, readers must conclude that Cal Fire has no intention, and no practical way, of attempting to implement this unrealistically strict threshold.

Achieving CEQA Adequacy in Setting Thresholds of Significance

Adequate and appropriate thresholds of significance for the DEIR would realistically evaluate impacts at the watershed level. For example, project impacts that could potentially reduce the viability of a population of one or more special-status species within a given watershed should be considered potentially significant. Appropriate mitigation would consist of actions designed to maintain population viability within all watersheds that currently support the species.

INADEQUATE TREATMENT OF SPECIAL-STATUS SPECIES

Page 4-182 of the DEIR states:

> Under the federal Endangered Species Act, activities may not result in the take, direct or indirect, of a special status species. Direct take involves the killing of a special status plant or animal. Indirect take includes the alteration of habitat, harassment, and any other activity that may contribute to the reduction in numbers of a special status species. Only indirect take, due to alteration of habitat by invasive non-native species, is applicable to activities affecting special status species under the proposed program or the alternatives.

This is not accurate. Most listed species are habitat specialists that require a fairly specific combination of habitat variables for persistence. Vegetation treatments have potential to cause indirect take by eliminating requisite habitat conditions (e.g., seral stage, habitat elements, prey availability). Indirect take could also occur via, e.g., noise and human presence associated with component projects. Moreover, despite acknowledging potential for indirect take due to non-native species, the DEIR fails to incorporate any long-term mitigation and monitoring to ensure that each component project does not result in substantial alteration of natural habitats through invasion by non-native plants.

Project treatments also have the potential to cause direct take of listed species, such as through human crews or livestock removing nests, eggs, and/or young of listed bird species, prescribed fire burning such nests, etc. The DEIR fails to provide a complete assessment of such potentially significant project effects, or to provide adequate mitigation to justify a finding that no potentially significant effects upon listed species would remain after mitigation.

Page 4-188 states:

> . . . the average VTP subsequent activity size of 260 acres is small in comparison to most wildfires, which often exceed 10,000 acres. Therefore, VTP activities are unlikely to eliminate a sub-population, of even a fire-inhibited species, and prevent re-colonization of the area.

The DEIR's simplistic analysis simply concludes that wildfires are typically large and each treatment is relatively small, so there can be no significant impacts from treatments outlined in the DEIR. This isn't even an analysis, especially considering the sheer volume of scientific and practical study devoted to the roles of fire in rare plant dynamics and population management.

As summarized by Hessl and Spackman (1995):

> Fire plays a role in the management of many threatened and endangered plant species. Fire helps maintain open habitat (*Rome 1987; Jacobson et al. 1991), encourages sexual and vegetative reproduction (*Boyd 1987; Hartnett and Richardson 1989; *Kirkman and Drew 1993), and affects competing or associated plant species (Stone and Scott 1985; Melgoza et al. 1990; *Fishbein and Gori 1992). Although fire may injure or kill plants (Dunwiddie 1990; *Cobb 1994), long-term effects on species may be beneficial. For example, the same fire that kills plants may also reduce competitors (*Folkerts 1977; *U.S. Fish and Wildlife Service 1986) or create beneficial openings for seedling establishment (Gankin and Major 1964; *U.S. Fish and Wildlife Service 1990a, 1993; Menges and McAnlis 1994). Fire suppression may imperil some endangered plant species (Schwartz and Herman 1991; U.S. Fish and Wildlife Service 1990b; *Kagan 1992; *U.S. Fish and Wildlife Service 1994).
> [* in the original document refers to unpublished reports.]

And:

> Although the preservation and management of botanical diversity requires an understanding of the relation of fire to plants, the variety of responses documented in this bibliography suggests that the role of fire in creating, maintaining, and destroying rare plants and their habitats can be complex and elusive. For example, long-term monitoring is necessary to establish the role of fire in succession and other vegetative processes (Owen and Rosentreter 1992; *Sutter 1994; D. Soblo, The Nature Conservancy, Columbia, South Carolina, personal communication); a minimum of 3 years may be needed to study and predict rare plant population dynamics (Menges 1986); and fire intensity, extent of burn, and season of burn must be measured to determine the variability of fire behavior (Pavlovic 1994). Fires may be detrimental to some species in spring but beneficial in summer or fall or vice versa (*Lesica 1992; D. Gori, The Nature Conservancy, Tucson, Arizona, personal communication). Similarly, anthropogenic disturbances, such as mowing or grazing, can mimic a historical fire regime if they occur with the correct frequency and intensity but can also be destructive (Pavlovic 1994).

In California, wildfires occur most frequently during the period between late summer and early winter, at a time when rare annual plants have gone to seed. Native plants have evolved in fire-prone areas, and are adapted to fires that occur during this typical "fire season," and thus wildfires seldom eliminate rare plant populations. But fires during other times of year —such as when rare annual plants have emerged but not yet set seed — could certainly impact rare plants. Fires, mechanical clearing, and herbivory can also impact rare plant populations, through destruction of the plants themselves, by causing the spread of invasive weeds into rare plant populations, etc. The DEIR gives no reason to believe that any of the careful planning or monitoring actions recommended in the scientific literature would be accomplished as part of the proposed actions, and so we must expect that those actions would result in significant impacts to numerous rare plant populations.

At a still more basic level, the DEIR's impact analysis is completely disingenuous given that the impacts would not be "260 acres" but rather 260 acres per activity x 230 activities per year x 10 years = 600,000 acres of total impact. Innumerable rare plant populations have potential to occur in the project areas, and without focused rare plant surveys — and provision of adequate mitigation, if rare plants are detected— Cal Fire has no ability to reach credible conclusions about potential impacts to rare plants that may result from implementation of the proposed actions.

Page 4-198 of the DEIR states, "Over 600 special status wildlife taxa occur in California, and over 300 occur in habitats likely to be treated under the VTP." Remarkably, however, the DEIR fails to identify the special-status species that could be affected by the project, or their regulatory status. This precludes proper understanding of the project and the ability to independently assess the conclusions provided in the DEIR. In fact, this is the first EIR I have reviewed in 30 years of consulting that fails to include a list of the special-status species potentially occurring in the area proposed for impacts, or any analysis of potential project effects on listed or other special-status species.

Page 4-198 continues:

> Responses of wildlife to fuel reduction treatments have not been studied extensively and information on many taxonomic groups are lacking. Direct and indirect effects on wildlife are likely to differ. As a rule, negative effects will be greatest on species dependent on the fuels being removed, while positive effects will be greatest on species that have evolved in fire-dependent and other disturbance-prone ecosystems.

These statements are so vague and generalized as to be meaningless, and even this brief paragraph appears to contradict information provided elsewhere in the CEQA document. Whereas the passage above refers to "fire-dependent and other disturbance-prone ecosystems," page 4-179 of the DEIR characterizes the fire-dependent ecosystem of chaparral as being far less "disturbance-prone" than once believed:

> The Van de Water and Safford (2011) review of fire frequency estimates for California vegetation types supports the idea that chaparral is an infrequent fire system. The mean and median fire return intervals for the composite type "chaparral and serotinal conifers" are 55 and 59 years respectively. The mean minimum is 30 years. These numbers are significantly greater than those that have traditionally been cited.

The bottom line is that the DEIR provides no relevant guidance about which listed or otherwise special-status species could potentially suffer significant adverse impacts from conducting fuel-reduction activities across 600,000 acres of natural habitats. I have never reviewed a CEQA document, let alone one for such a geographically expansive project, that failed to systematically review and evaluate impacts upon listed or otherwise special-status species.

Achieving CEQA Adequacy in Addressing Special-Status Species

As discussed previously, Section 15125(C) of CEQA states, "Special emphasis should be placed on environmental resources that are rare or unique to that region and would be affected by the project." To achieve CEQA adequacy, a programmatic EIR evaluating the potential effects of manipulating 600,000 acres of natural habitats upon the special-status plant and wildlife species occupying those habitats should refer to the State's lists of Special Animals (California Department of Fish and Wildlife 2017) and Special Vascular Plants, Bryophytes, and Lichens (California Department of Fish and Wildlife 2018).

The CEQA document should (a) identify each special-status species potentially affected by the proposed actions, (b) analyze whether the proposed actions would entail potentially significant effects to each special-status species, and (c) identify feasible and enforceable mitigation measures to address any potentially significant impacts identified in the CEQA analysis. If mitigation is not feasible, then the CEQA document requires a statement of overriding considerations for each significant impact that cannot be feasibly mitigated before it can be certified. These are routine, basic requirements of CEQA that cannot be glossed over for any reason.

FAILURE TO INCORPORATE STUDIES OF HABITAT DISTURBANCE

Page 4-198 of the DEIR states, "Responses of wildlife to fuel reduction treatments have not been studied extensively and information on many taxonomic groups are lacking." Contrary to this assertion, there exists an extensive body of published, peer-reviewed research concerning the biological impacts associated with habitat disturbance along development edges and habitat fragmentation. Specifically, the large-scale deployment of prescribed burns, mechanical disturbance, manual clearing, prescribed herbivory, and herbicides will increase the magnitude of existing edge effects along the 100-foot-wide wildland-urban interface, in areas where the euphemistic "ecological restoration" is undertaken outside of the wildland-urban interface, and where new fuel breaks are established. Although these studies are easily obtainable, the DEIR fails entirely to incorporate this research. What follows is a summary of relevant published research on this topic, including citations from the scientific literature.

Urbanization typically includes residential, commercial, industrial, and road-related development. At the perimeter of the built environment is the wildland-urban interface, or "development edge." In ecology, "edges" are places where natural communities interface, vegetation or ecological conditions within natural communities interact (Noss 1983), or patches with differing qualities abut one another (Ries and Sisk 2004). "Edge effects" are spillover effects from the adjacent human-modified matrix that cause physical gradients in light, moisture, noise, etc. (Camargo and Kapos 1995; Murcia 1995, Sisk et al. 1997) and/or changes in biotic factors such as predator communities, density of human-adapted species, and food availability (Soulé et al. 1988; Matlack 1994; Murcia 1995; Ries and Sisk 2004). Edge effects and habitat fragmentation are among the principal threats to persistence of biological diversity (Soulé 1991). Edge-related impacts relevant to the proposed actions include:

- Introduction/expansion of invasive exotic vegetation carried in from vehicles, people, animals or spread from fuel reduction zones adjacent to wildlands.
- Creation and use of undesignated trails, including mountain bike tracks, that often significantly degrade the reserve ecosystems through such changes as increases in vegetation damage and noise.
- Introduction of or increased use by exotic animals which compete with or prey on native animals.

- Influence on earth systems and ecosystem processes, such as solar radiation, soil richness and erosion, wind damage, hydrologic cycle, and water pollution that can affect the natural environment.

Any of these impacts, individually or in combination, can result in the effective loss or degradation of habitats used for foraging, breeding or resting, with concomitant effects on population demographic rates of sensitive species.

Harrison and Bruna (1999) completed a review of a suite of studies dealing with fragmentation and edge effects and identified a general pattern of reduction of biological diversity in fragmented habitats compared with more intact ones, with particular regard to habitat specialists. While physical effects associated with edges were predominant among species impacts, they found evidence for indirect effects including altered ecological interactions. Fletcher et al. (2007) found that distance from edge had a stronger effect on species than did habitat patch size, but they acknowledged the difficulty in separating those effects empirically. Many southern California plant and animal species are known to be sensitive to fragmentation and edge effects; that is, their abundance declines with fragment size and proximity to an edge (Wilcove 1985; Soulé et al. 1992; Bolger et al. 1997a, b; Suarez et al. 1998; Burke and Nol 2000; Henle et al. 2004).

Wildlife populations are typically changed in proximity to edges, either by changes in their demographic rates (survival and fecundity), or through behavioral avoidance of or attraction to the edge (Donovan et al. 1997; Sisk et al. 1997; Ries and Sisk 2004). For example, coastal sage scrub areas within 250 meters of urban edges consistently contain significantly less bare ground and more coarse vegetative litter than do more "intermediate" or "interior" areas, presumably due increased human activity/disturbance of the vegetation structure near edges (Kristan et al. 2003). Increases in vegetative litter often facilitate growth of non-native plants (particularly grasses), resulting in a positive feedback loop likely to enhance plant invasion success (Wolkovich et al. 2009). In another coastal southern California example, the abundance of native bird species sensitive to disturbance is typically depressed within 200 to 500 meters of an urban edge, and the abundance of the disturbance-tolerant species is elevated up to 1000 meters from an urban edge, depending on the species (Bolger et al. 1997a).

Habitat fragmentation is usually defined as a landscape scale process involving habitat loss and breaking apart of habitats (Fahrig 2003). Habitat fragmentation is among the most important of all threats to global biodiversity; edge effects (particularly the diverse physical and biotic alterations associated with the artificial boundaries of fragments) are dominant drivers of change in many fragmented landscapes (Laurance and Bierregaard 1997; Laurance et al. 2007).

Fragmentation decreases the connectivity of the landscape while increasing both edge and remnant habitats. Urban and agricultural development often fragments wildland ecosystems and creates sharp edges between the natural and human-altered habitats. Edge effects for many species indirectly reduce available habitat use or utility in surrounding remaining areas; these species experience fine-scale functional habitat losses (e.g., see Bolger et al. 2000; Kristan et al. 2003; Drolet et al. 2016). Losses of coastal sage scrub in southern California have resulted in the increased isolation of the remaining habitat fragments (O'Leary 1990). Fragmentation has a greater relative negative impact on specialist species (e.g., the Coastal Cactus Wren, *Campylorhynchus brunneicapillus*) that have strict vegetation structure and area habitat requirements (Soulé et al. 1992).

Specialist species have an increased risk of extirpation in isolated habitat remnants because the specialized vegetative structures and/or interspecific relationships on which they depend are more vulnerable to disruption in these areas (Vaughan 2010). In studies of the coastal sage scrub and chaparral systems of coastal southern California, fragment area and age (time since isolation) were the most important landscape predictors of the distribution and abundance of native plants (Soulé et al. 1993), scrub-breeding birds (Soulé et al. 1988; Crooks et al. 2001), native rodents (Bolger et al. 1997b), and invertebrates (Suarez et al. 1998; Bolger et al. 2000).

Edge effects that emanate from the human-dominated matrix can increase the extinction probability of isolated populations (Murcia 1995; Woodroffe and Ginsberg 1998). In studies of coastal sage scrub urban fragments, exotic cover and distance to the urban edge were the strongest local predictors of native and exotic carnivore distribution and abundance (Crooks 2002). These two variables were correlated, with more exotic cover and less native shrub cover closer to the urban edge (Crooks 2002).

The increased presence of human-tolerant "mesopredators" in southern California represents an edge effect of development; they occur within the developed matrix and are thus more abundant along the edges of habitat fragments, and they are effective predators on birds, bird nests, and other vertebrates in coastal sage scrub and chaparral systems and elsewhere (Crooks and Soulé 1999). The mammalian carnivores more typically detected in coastal southern California habitat fragments are resource generalists that likely benefit from the supplemental food resources (e.g., garden fruits and vegetables, garbage, direct feeding by humans) associated with residential developments. As a result, the overall mesopredator abundance, of such species as raccoons (*Procyon lotor*), opossums (*Didelphis virginiana*), and domestic cats (*Felis catus*), increases at sites with more exotic plant cover and closer to the urban edge (Crooks 2002). Although some carnivores within coastal sage scrub natural community fragments seem tolerant of disturbance, these fragments have (either actually or effectively) already lost an entire suite of predator species, including mountain lion, bobcats (*Lynx rufus*), spotted skunks (*Spilogale gracilis*), long-tailed weasels (*Mustela frenata*), and badgers (*Taxidea taxus*) (Crooks 2002). Most "interior" sites within such fragments are still relatively near (within 250 meters of) urban edges (Crooks 2002).

Fragmentation generally increases the amount of edge per unit land area, and species that are adversely affected by edges can experience reduced effective area of suitable habitat (Temple and Cary 1988), which can lead to increased probability of extirpation/extinction in fragmented landscapes (Woodroffe and Ginsberg 1998). For example, diversity of native bees (Hung et al. 2015) and native rodents (Bolger et al. 1997b) is lower, and decomposition and nutrient cycling are significantly reduced (Treseder and McGuire 2009), within fragmented coastal sage scrub ecosystems as compared to larger core reserves. Similarly, habitat fragmentation and alterations of sage scrub habitats likely have reduced both the genetic connectivity and diversity of coastal-slope populations of the Cactus Wren in southern California (Barr et al. 2015). Both Bell's Sparrows (*Artemisiospiza belli)* and California Thrashers (*Toxostoma redivivum*) show strong evidence of direct, negative behavioral responses to edges in coastal sage scrub; that is, they are edge-averse (Kristan et al. 2003), and California Thrashers and California Quail (*Callipepla californica)* were found to be more vulnerable to extirpation with smaller fragment size of the habitat patch (Bolger et al. 1991), demonstrating that both behavioral and demographic parameters can be involved. Other species in coastal sage scrub ecosystems, particularly the Cactus Wren and likely the California Gnatcatcher (*Polioptila californica*) and San Diego pocket mouse (*Chaetodipus fallax*), are likely vulnerable to fragmentation, but for these species the mechanism is likely to be associated only with extirpation vulnerability from habitat degradation and isolation rather than aversion to the habitat edge (Kristan et al. 2003). Bolger (et al. 1997b) found that San Diego coastal sage scrub and chaparral canyon fragments under 60 acres that had been isolated for at least 30 years support very few populations of native rodents, and they suggested that fragments larger than 200 acres in size are needed to sustain native rodent species populations.

Achieving CEQA Adequacy in Analyzing Potential Project Effects

The DEIR fails to provide adequate analysis of the extensive effects of the proposed vegetation disturbance of 600,000 acres. Rather, the DEIR defers such analysis of impacts and any mitigation measures to the individual project level. This turns the CEQA review process on its head, with the State of California itself providing the green light for initiating large-scale disturbance of innumerable natural areas — 938 square miles of them — without conducting anything more than rudimentary analysis of the potential effects of doing so. Once the VTP is approved, project-level analyses conducted under the umbrella authority of the programmatic EIR (if project-level analyses are conducted at all) would be unlikely to substantially alter the scope of the proposed actions. Furthermore, in light of the deficient and perfunctory analysis of potentially significant adverse effects upon biological resources contained in the DEIR itself, there is no realistic expectation that subsequent analyses would be any more rigorous.

An adequate CEQA analysis in the DEIR would (a) identify and adequately describe all of the potentially significant disturbance and fragmentation effects upon biological resources resulting from specific activities associated with project implementation (based on the extensive scientific research identified above); (b) prescribe specific mitigation actions that would have to be completed to avoid or minimize any effects judged to be potentially significant; and (c) include a mitigation mechanism that the Board and Cal Fire could realistically monitor and enforce. Furthermore, CEQA requires that the lead agency identify any and all residual significant impacts that would remain after mitigation. Since the DEIR accomplishes none of these basic requirements of CEQA, the document's impact analysis must be recognized as misleading, grossly deficient, and not backed by substantial evidence.

INADEQUATE CONSIDERATION OF POTENTIAL GRAZING IMPACTS

Page 4-61 of the DEIR acknowledges that, for the herbivory program to be effective, "the right combination of animals, stocking rates, timing, and rest must be used." The document further acknowledges that "Many weed species are less palatable than desired vegetation, so the animals may overgraze desired vegetation rather than the weeds." Figure 4.1-24 in the DEIR — intended to show "Use of goats to reduce competing vegetation" — in fact shows 12 of the animals completely ignoring the exotic weeds around them to graze a native oak (see Exhibit 8, below).

Figure 4.1-24 Use of goats to reduce competing vegetation.

Exhibit 8. This photographic figure from the DEIR shows herbivores employed in a fuel reduction project choosing to graze native vegetation even when the intended forage plants – i.e., dried grasses and weeds – are all around them.

The DEIR does not evaluate the extensive impacts to species and sensitive native plant communities that would result from grazing treatments. Nor does it explain a mechanism by which grazing native trees and shrubs while leaving behind a carpet of dried herbaceous plants, as shown in Figure 4.1-24, reduces fire risk. Rather, the document states the opposite: "In particular, goats are extremely selective and thus ideally positioned to become rather highly specific bio-control agents." In support of this view, and other pro-herbivory opinions highlighted in the impact analysis, the DEIR cites a single PowerPoint presentation given at a 2006 Integrated Pest Management symposium:

Pittroff, W. 2006. Prescribed Herbivory: An Emerging Biocontrol Tool for Managing Invasive Species. Presentation may be viewed at https://ipmsymposium.org/2006/sessions/12-1.pdf

Anyone who has seen goats forage in any setting knows that they will eat a great variety of food (and non-food) items. It may be *possible* to control them, but the DEIR establishes no policies or processes designed to ensure this actually happens. Rather than provide current and comprehensive scientific evidence explaining how grazing treatments could be implemented in a manner that would ensure sensitive vegetation is protected, the DEIR relies on a single, unpublished presentation given at a pest-management symposium 12 years ago.

The DEIR does acknowledge some of the many published studies that have identified livestock grazing as a major cause of thinning and degradation of native scrub and chaparral communities in California, but these inconvenient studies are not given much weight in the impact analysis. The following points expand upon the limited information on this topic provided in the DEIR:

- Grazing opens up the shrub canopy to invasion by exotic annual species, disseminates seeds, and reduces the ability of native forbs and perennial bunch grasses to compete with exotics (e.g., McBride 1974, Freudenberger et al. 1987, O'Leary and Westman 1988).
- Increasing the weedy understory of native scrub and chaparral communities may shorten fire intervals by increasing the habitat's flammability (e.g., Drake and Mooney 1986, Huenneke and Mooney 1989, D'Antonio and Vitousek 1992).
- Exotic grass and forb species "may alter nutrient and moisture regimes, inhibiting the establishment, growth, and survival of native shrubs" (Minnich and Dezzani 1998).

Thus, the best available scientific information indicates that, unless very carefully controlled, herbivory results in potentially significant impacts to natural communities, and may actually **increase** fire hazards.

Herbivory Impact Analysis

On page 4-203, the DEIR acknowledges the potential biological impacts of herbivory treatments:

> The potential for substantial adverse effects from prescribed herbivory are most likely to occur through forage modification or animal waste input to watercourses. Scoping, surveying, and consultation with the responsible agency regarding the location of special status animals will occur through MM BIO-1. Implementation of MM BIO-4, MM BIO-6, MM BIO-7, MM HYD-2, and MM HYD-9 by subsequent activities under this PEIR will reduce the potential for these impacts to less than significant. Implementation of SPR ADM-1 and ADM-2 requires protected resources to be marked and discussed with the contractor prior to operations.

Contrary to the requirements of CEQA, the DEIR provides no evidence that the mitigation measures would reduce significant impacts that grazing may have on native communities. The DEIR simply asserts that these measures address all of the problems, so readers need not concern themselves with the details. Note that, for example, none of these measures actually addresses forage modification. To do so, the DEIR would need to include, or require preparation of, a grazing management strategy that would (a) identify acceptable parameters for a CEQA-compliant grazing regime, (b) describe a suitable monitoring program, and (c) outline an adaptive management strategy.

Page 4-209 states, "The analysis above concludes that the program has the potential to significantly impact invasive species." Given that removal of invasive species is ostensibly the goal of the treatment, this appears to be a typographical error.

Page 4-209 goes on to provide the following rationale for why herbivory would not pose any potentially significant impacts:

> To minimize the potential for any individual subsequent activity from causing a discrete significant impact, or the potential for the cumulative impacts of the program becoming significant, the following mitigation measures shall be implemented as appropriate during subsequent activities. MM BIO-2 protects against type conversion in southern California chaparral. MM BIO-3 retains native acorn producing oaks for future regeneration. MM BIO-5 requires use of certified weed free straw and mulch for erosion control and [MM] BIO-6 designs subsequent activities to limit the spread of invasive pests already in the subsequent activity area.

These generalized and limited mitigation measures fall far short of what would be required to ensure against potentially significant impacts from herbivory treatments. For example, no measures address effects of herbivory treatments on plant community composition, or the potential for livestock to introduce weeds when they are moved from one site to another (e.g., from seeds in hooves and hair). Without a detailed impact analysis based upon substantial evidence that considers all potentially significant impacts, and that explains how each impact would be reduced to below the level of significance through carefully designed and adequate mitigation measures, the DEIR lacks the evidentiary basis that impacts from herbivory treatments would be less than significant.

Achieving CEQA Adequacy in Addressing Herbivory Impacts

In light of the risks posed by employing herbivores to graze tens or hundreds of thousands of acres, the DEIR must establish well-conceived policies and processes to (a) identify the "right combination" of animals for successful herbivory treatments under various typical scenarios; (b) avoid overgrazing of native communities; (c) carefully monitor herbivory treatments; (d) incorporate mitigation measures that address monitoring and eradication of weeds in and adjacent to fuel breaks created, or maintained, as part of the project (or for any other project treatments); and (e) adopt adaptively manage herbivory treatments (or any other project treatments), using monitoring observations in order to ensure that mitigation measures achieve specific goals and objectives.

Since the DEIR fails to accomplish any of these necessary steps, the document provides no support for its conclusion that herbivory impacts would be less than significant. The published literature, and my own experience observing the adverse ecological effects of goats, sheep, and cattle grazing in natural areas, lead me to conclude that a statewide herbivory program lacking the safeguards identified above would almost certainly result in the invasion of various exotic grasses and weeds into numerous natural areas. Additional substantial evidence, cited previously in these comments, points to a conclusion that such a program could potentially increase fire hazards in those areas where non-native grasses and weeds were not prevalent pre-project.

FAILURE TO ADDRESS IMPACTS TO NESTING BIRDS

Federal Migratory Bird Treaty Act

For decades, the federal Migratory Bird Treaty Act (MBTA) of 1918 criminalized the intentional or inadvertent disruption of nesting by nearly all native bird species. In a recent memorandum, however, the federal government reversed course:

> Based upon the text and purpose of the MBTA, as well as sound principles of constitutional avoidance, this memorandum concludes that the MBTA's prohibitions on pursuing, hunting, taking, capturing, killing, or attempting to do the same only criminalize affirmative actions that have as their purpose the taking or killing of migratory birds, their nests, or their eggs (US Department of the Interior 2017).

Since the proposed project would not intentionally disrupt nesting birds, under current federal interpretation of the MBTA any unintended disruption of nesting, no matter how predictable, currently represents a violation of the MBTA.

California Fish and Game Code

The State of California's Fish and Game Code maintains two provisions that address the disruption of nesting birds, intentionally or otherwise:

> **3503.** It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.
>
> **3503.5.** It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

Many of the actions proposed under the VTP are likely to result in take, possession, or needless destruction of the nest or eggs of any bird. Thus, the DEIR is deficient in its failure to evaluate the proposed actions and predictable violations of Sections 3503 and 3503.5 of the Fish and Game Code that would result from undertaking fuel-reduction activities during the bird nesting season (roughly February through August). This inadequacy must be addressed before the DEIR can be certified.

MITIGATION MEASURES FUNDAMENTALLY FLAWED

The DEIR fails to satisfy numerous fundamental requirements of CEQA with respect to the content and format of identified mitigation measures:

1. The measures provide no mechanism to ensure that appropriate mitigation is formulated and implemented.
2. The measures include no enforcement mechanisms. This will cause major problems, especially in those cases where Appendix J seeks to transfer mitigation responsibility to landowner. For example, page J-9 states that "Landowner will plant oaks when natural regeneration fails." Such transfer is not allowed under CEQA, as the lead agency maintains legal responsibility for ensuring and verify-

ing the successful completion of mitigation actions, even if the mitigation is performed by another party.

3. The measures identify no performance standards, and no contingency measures in case a mitigation measure is deemed to fail.
4. The measures include no monitoring and/or reporting programs.

For all of these fundamental reasons, the DEIR cannot provide any legitimate, verifiable assurance that potentially significant impacts to sensitive biological resources would be mitigated to less than significant levels. The following discussion identifies the flaws in the biological mitigation measures.

MM BIO-1

Page 2-35 of the DEIR asserts that "the activity sites would be surveyed for listed, state-candidate, state and federal threatened or endangered species." This statement is, however, not reflected in the mitigation measures. For example, MM BIO-1 requires only a search of the California Natural Diversity Data Base (CNDDB), followed by a "field review" to identify presence or absence of any special-status species. The DEIR fails to identify the methods for this "field review," which sounds like a tour of the project site, during which any special-status species opportunistically detected are noted. The DEIR never specifically calls for protocol-level surveys. Such surveys are required in order to obtain reliable information on the presence, abundance, and distribution of special-status species in any project area.

Furthermore, the DEIR places too much emphasis on the value of the CNDDB. Especially in rural areas where many of the treatment activities are planned, the CNDDB is unlikely to have records of many, if any, of the special-status species that have reasonable potential for occurrence. This is because the CNDDB reflects only those species that have been positively recorded and then submitted to the CNDDB, and this reflects only a tiny fraction of the actual occurrences of special-status species in most areas. Thus, whereas the CNDDB is one important tool for identifying the species that could occur, simply searching the CNDDB is far from adequate for determining the full list of special-status species potentially present in a given area.

The correct approach for determining the special-status species potentially occurring in a given area involves the following steps:

1. Search CNDDB *and* other databases (e.g., California Consortium of Herbaria, California Native Plant Society online inventory, eBird, and databases maintained by National Forests); if necessary, request suppressed data from CNDDB and eBird.
2. Solicit information from other sources, such as research studies, survey reports from other projects, and local experts.
3. Identify potential habitat using maps, imagery, and/or site visits.

4. Using information obtained from the three previous items, a knowledgeable biologist identifies species that could occur. Often, this approach will identify species that may be present, but that are not yet recorded in the CNDDB or other databases; conversely, not all species that turn up in the CNDDB or other databases will have potential to occur at project site.
5. Qualified biologist conducts appropriately timed, focused (protocol) surveys for potentially occurring species if those species could be adversely affected by the project. In most cases, full floristic surveys should be conducted for plants due to the difficultly in predicting species occurrence.
6. The biologist prepares a report, including a legitimate impact analysis and appropriate mitigation measures that satisfy CEQA's requirements.

MM BIO-1 also states that the project coordinator shall submit a letter to the Wildlife Agencies requesting "information regarding the known location of any special status species or applicable HCPs in the activity vicinity, and take avoidance measures to be implemented." The measure goes on to specify that, should the USFWS fail to respond to this request within 30 days, the proposed actions would be allowed to proceed in potential violation of HCP requirements. This is inappropriate, and potentially illegal. The USFWS, like all governmental agencies, is frequently under extreme budgetary and personnel constraints, and may not always be able to respond to all requests within 30 days. Failure to meet the DEIR's arbitrary deadline does not necessarily provide valid legal cover for Cal Fire, or any other agency or landowner, to assume that any action proposed within an HCP is allowable without written notification of concurrence from the USFWS (regardless of timeframe).

MM BIO-2

This measure specifies that prohibitions against certain potential adverse effects of treatments, such as type conversion, would apply in only nine counties. This suggests that these potential adverse effects would be allowed in the other 49 counties. The DEIR fails to justify this differential treatment of different counties in California.

MM BIO-4

This measure calls for a 50-foot buffer around any special-status animal, nest, or den, and a 15-foot buffer around any special-status plant. The DEIR fails to provide any evidence or analysis indicating these buffer distances would be sufficient to mitigate potentially significant impacts. Indeed, scientific literature suggests much larger buffers are needed. For example:

- The State of California recommends buffers of 50 to 500 m for Burrowing Owls (*Athene cunicularia*) depending on level of disturbance and time of year (CDFG 2012).
- The State of California recommends buffers of a quarter-mile to half-mile for nests of Swainson's Hawk (*Buteo swainsoni*; CDFG 1994).

- The US Forest Service restricts forest operations within a quarter mile of the nest of California Spotted Owls (*Strix occidentalis occidentalis*)—or unsurveyed suitable habitat—during the "Limited Operating Period" between March 1 and August 15 (USFS 2006).
- Semlitsch and Bodie (2003) provided evidence that buffers of 15 to 30 m are inadequate for reptiles and amphibians; they recommended buffers of 192 to 339 m.
- The Conservation Biology Institute (2000) recommends a buffer of 200 feet to protect the San Fernando Valley Spineflower (*Chorizanthe parryi* var. *fernandina*).
- To protect at-risk prairie plants, the Canadian Wildlife Service recommends a minimum setback distance of 30 m from vehicles and vegetation mowing activities, and 300 m for firebreaks and pesticide use (Henderson 2011).

MM BIO-6

This measure calls for Best Management Practices (BMPs) to be implemented for a given program activity "If the Program Coordinator determines that there is a significant risk of introducing or spreading an invasive pest." This measure is vague and uncertain, as written, because the DEIR fails to define what is considered a "significant risk." More fundamentally, all of the proposed projects have a risk of transmitting invasive species because they involve factors that are conducive to spread of non-natives, including ground disturbance, movement of people, and deployment of livestock and equipment from outside areas. Thus, BMPs must be implemented for all projects, not just ones deemed to pose a "significant risk."

One of the BMPs identified in the measure is to wash equipment "to the extent feasible" prior to moving from infected area to unaffected area. The DEIR fails to qualify feasibility. Under what circumstances would it be infeasible to wash equipment? In any event, language such as "to the extent feasible" indicates that the measure is unenforceable; consequently, the violates CEQA's requirements.

Whereas the BMPs listed in BIO-6 represent potentially useful preventative measures, they do not and cannot address weed populations that colonize or expand regardless of BMPs (e.g., through aerial propagules). All project areas have weeds. Project implementation will create conditions favorable to colonization/expansion of these weeds due to ground disturbance (as the DEIR acknowledges at the bottom of p. 4-205 and on subsequent pages). Thus, the actions identified in BIO-6, while necessary, are insufficient to mitigate potential impacts of expanding populations of non-native, invasive plant species to a less-than-significant level. Exhibit 9, on the following page, is a photo that botanist Ron Vanderhoff took in Upper Decker Canyon in western Riverside County on May 14, 2014, after a wildfire burned the area in August 2013. The photo shows how exotic weeds often become established along fuel breaks, thereby extending flashy fuels into otherwise intact chaparral.

Exhibit 9. Showing how non-native annual mustard invades otherwise intact chaparral along fuel breaks. When dry, as it is most of the year, mustard is a flashy fuel that can ignite more readily than the surrounding native chaparral. *Ron Vanderhoff*.

Implementing the proposed project across 600,000 acres of natural lands would spread numerous invasive and highly flammable weeds into areas where they do not currently occur, a potentially significant impact not only to biological resources, but also to the fire-protection objectives of the proposed project. The DEIR should, therefore, include a mitigation that specifically calls for "early-detection and rapid-response" to weed infestations resulting from project implementation. The Orange County chapter of the California Native Plant Society (CNPS) and the Natural Communities Coalition (the organization that administers the Central and Coastal Orange County NCCP preserves) are pioneering this program that is specifically designed to prevent degradation of natural open spaces by new invasive plant species that have started showing up in the region's open spaces in recent years. See https://occnps.org/invasives/what-is-edrr.html:

> Early Detection and Rapid Response (EDRR) is a management approach that capitalizes on our ability to most effectively eradicate invasive plant populations when they are small. By detecting a new invasive plant before it has a chance to spread or build a large seed bank, managers can respond early enough in the invasion process to fully eradicate the species from a given area. Through EDRR, well-informed surveillance can avoid costly long-term control efforts.

Additional information on this management approach can be found at:

www.occnps.org/invasives/32-information/337-emergent-invasive-plant-management-program.html

Given the research identified above, an "early-detection rapid-response" program is clearly a feasible mitigation. Moreover, such a program would be quantifiable and proactive and is therefore capable of reducing the VTP's significant impacts.

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Cumulative Impact Analysis

Section 15130 of CEQA states:

> The following elements are necessary to an adequate discussion of significant cumulative impacts:
>
> (1) Either:
>
> (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or
>
> (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or areawide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.

Rather than evaluating the proposed project in the context of past, present, and projected future projects, as CEQA requires, page 5-35 of the DEIR concludes that the project's contribution to cumulatively significant effects upon biological resources is negligible by simply observing that the acreage of impact (60,000 acres per year) would represents only "0.25 percent of the acreage available for treatment" (2.58 percent of the available acreage over the ten-year life of the project). This is another way that the DEIR turns CEQA on its head, as the very purpose of a cumulative impacts analysis is to avoid the trap of evaluating each project in a vacuum, as if no other projects have been built or will be built in the future, and as if several projects combined have no greater potential for causing significant impacts than does any one project by itself. If a project that proposes impacts to 600,000 acres of natural habitat over 10 years is judged to be so small and inconsequential that it has no potentially significant cumulative impacts, could any project be large enough to trigger a finding of potentially significant effects?

Achieving CEQA Adequacy in Analyzing Cumulative Effects

An adequate DEIR must provide the mandatory information identified in Section 15130 of CEQA. Until this basic information is provided by the CEQA lead agency, there is no point in further considering this issue.

Growth-inducing Effects Analysis

15126.2(d) of the CEQA Guidelines states:

> The EIR shall discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. **Also, discuss the characteristics of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively.** It must not be assumed that growth in any area is

> necessarily beneficial, detrimental, or of little significance to the environment. [emphasis in bold font added]

Page 6-3 of the DEIR states:

> The proposed program will not have any growth-inducing impacts because it will not foster growth or result in new housing or construction of facilities. The project is a vegetation management program intended to better manage the State's natural resources and protect people and sensitive natural communities from the effects of wildfires. No reasonably foreseeable growth-inducing impacts have been identified that would result from implementation of the proposed program or the alternatives to the proposed program.

And yet, in order to justify the need for the VTP in the first place, page E-2 of the DEIR states:

> Wildfire acreage in California increases with prolonged drought and extreme weather conditions (e.g., Santa Ana winds), and the amount of housing within the highest wildfire hazard severity zone (very high) is expected to grow from 640,000 units to over 1.2 million units by 2050 (Mann, 2014).

Thus, the DEIR itself states that this fuel-reduction program has been developed, at least in part, to facilitate future growth "within the highest wildfire hazard severity zone . . . from 640,000 to over 1.2 million units by 2050." Without the DEIR, developers would have much greater difficulty constructing more than 640,000 new units in the most fire-prone areas of the State. Thus, by its own admission, the VTP "may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively."

The DEIR's failure to even acknowledge the possibility that reducing fuel loads across 600,000 acres of natural communities scattered throughout California might play a role in future development patterns in the state is completely disingenuous.

Achieving CEQA Adequacy in Analyzing Growth-inducing Effects

An adequate CEQA analysis would acknowledge that substantial evidence supports a conclusion that implementation of the VTP would facilitate other activities — i.e., large-scale expansion of housing in highest wildfire hazard severity zone — that could significantly affect the environment, either individually or cumulatively. The DEIR must evaluate the environmental impacts that would result from this increase in housing in wildfire hazard severity zones.

As noted previously in these comments, nothing in the DEIR acts as a disincentive to building new houses within the highest wildfire severity zone, or requires any potential developer to use only the least-flammable feasible construction methods. Incorporation of these concepts into a revised VTP could (a) reduce the extent of habitats disturbed under the VTP (and hence the extent of future growth facilitated), and (b) temper the need for the VTP's extensive fuel-reduction actions (because the houses themselves would not be susceptible to catching fire).

SUMMARY AND CONCLUSION

As discussed in these comments, the programmatic DEIR for the proposed Vegetation Treatment Program contains innumerable omissions of basic information and analyses that CEQA mandates. The deficiencies in the DEIR are of a number and magnitude that cannot be addressed adequately in a Final EIR. Implementation of the project, as proposed, will certainly degrade large areas of native vegetation alliances and associations, and, as discussed herein, could **increase** fire risks in some areas. The Board and Cal Fire should re-evaluate the proposed actions in light of CEQA's requirements for thorough analyses of the best available information, backed by substantial evidence. A revised draft DEIR should then be prepared and submitted for public review and comment.

I appreciate the opportunity to provide these comments on the DEIR. If you have questions, please call me at (562) 477-2181 or send e-mail to robb@hamiltonbiological.com.

Sincerely,

Robert A. Hamilton
President, Hamilton Biological, Inc.

Attached:

- Literature Cited
- Curriculum Vitae

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January 11, 2018

Via FedEx and E-Mail

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Re: Vegetation Treatment Program Recirculated Revised Draft Program Environmental Impact Report

Dear Ms. Hannigan:

This firm represents the Endangered Habitats League ("EHL") in connection with the Vegetation Treatment Program ("VTP" or "Program") and its associated Recirculated Revised Draft Program Environmental Impact Report ("DEIR").[1] EHL is southern California's only regional conservation organization, and it and its members have a direct stake in maintaining the health of Southern California's unparalleled biodiversity and the native ecosystems that support it. Our client is deeply concerned about the far-ranging environmental impacts that would result from implementation of the VTP.

The following organizations have reviewed, and endorse, this letter: California Native Plant Society; Orange County Chapter, California Native Plant Society; Marin Chapter, California Native Plant Society; San Diego Chapter, California Native Plant Society; Riverside-San Bernardino Chapter, California Native Plant Society; Mount Lassen Chapter, California Native Plant Society; The Urban Wildlands Group; Audubon California; San Diego Audubon Society; Sea and Sage Audubon Society; Los Angeles

[1] The VTP and the DEIR have been prepared as one document. To avoid confusion, this letter distinguishes the Program from the DEIR.

Audubon Society; California Chaparral Institute; Natural Resources Defense Council; Laguna Greenbelt, Inc.; and Center For Biological Diversity. This letter represents the comments of EHL and each of the foregoing organizations.

The catastrophic wildfires in northern and southern California this past year have demonstrated more than ever the urgency of addressing wildfire issues in the state. But the Board and CAL FIRE seem to have drawn all the wrong lessons from those tragic events. At a time when the Board should be prioritizing the safety and protection of existing communities and developing strategies for minimizing the number of people and homes that are placed in harm's way, it is instead proposing to waste precious State resources on vegetation treatment strategies that leading wildfire experts agree are ineffectual at protecting lives and property from the most destructive wildfires. Indeed, the proposed VTP would serve to facilitate the expansion of development into extremely hazardous wildlands. And it does so at the cost not only of the State's limited fire-fighting resources, but of much of our natural and biological heritage.

Unfortunately, the VTP DEIR neither discloses nor provides mitigation for the devastating impacts the program will have on the environment. We had hoped that, after revising and recirculating the 2016 DEIR, the new draft would address the numerous deficiencies of that document identified by EHL and others. But after carefully reviewing the 2017 DEIR, we have concluded that virtually nothing has changed. As described below, the new DEIR violates the requirements of the California Environmental Quality Act ("CEQA"), Public Resources Code section 21000 *et seq.* ("CEQA") because it: (1) fails to adequately describe the VTP; (2) fails to properly analyze the Program's environmental impacts; (3) relies on ineffective and unenforceable mitigation to conclude that the VTP's impacts would be reduced to levels that are less than significant; and (4) fails to undertake a legally sufficient study of alternatives to the Program. Such fundamental errors undermine the integrity of the DEIR.

I. Introduction

The proposed VTP is a plan to burn, treat with herbicides, and otherwise modify the vegetative landscape of California on a massive and unprecedented scale. The Board of Forestry and Fire Protection's ("Board") Program requires the implementation of fuel management activities that would make about 23 million acres of land subject to treatment. DEIR at 2-12. That is an area greater than that of South Carolina and Delaware combined. The premise upon which the VTP rests—the Board's view that a substantial part of this vast amount of land must be "treated" to prevent wildfire—is not only grandiose but, for California's extensive shrub vegetation communities, entirely lacking in scientific basis. For this very large and vital component of the VTP, we can find no evidence in the DEIR that the VTP would even achieve the Board's mission of safeguarding the people and protecting the property and resources of California from the hazards associated with wildfire. Indeed, we are unaware of any other state that threatens the elimination of populations of sensitive wildlife and vegetation to prevent wildfires.[2]

The current VTP is particularly concerning as EHL and its expert scientists in the fields of fire science and ecology, fire management, biogeography, native plant ecology, biodiversity, and wildlife conservation biology submitted extensive comments on the prior (2013) VTP and its DEIR.[3] Wildlife regulatory agencies, including the United States Fish and Wildlife Service and the California Department of Fish & Wildlife, and other environmental organizations also submitted comments on the 2013 VTP and the DEIR.[4] Each of these letters and reports explained that the 2013 Program's approach to

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[2] The DEIR explains that there are over 600 special-status wildlife species in California, and that over 300 occur in habitats likely to be treated under the VTP. DEIR at 4-198. Thus, about half of the special-status animal species that occur in California could be affected by the proposed Project.

[3] The following letters and reports are attached and are incorporated by reference into this letter: Letter from Dan Silver, Executive Director, Endangered Habitats League to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013, attached as Exhibit 1; Letter from CJ Fotheringham, Research Ecologist, USGS to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013, attached as Exhibit 2; Letter from Wayne D. Spencer, Chief Scientist, Conservation Biology Institute to Board of Forestry and Fire Protection, February 25, 2013, attached as Exhibit 3; and Letter from Alexandra D. Syphard, Research Scientist, Conservation Biology Institute to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013, attached as Exhibit 4.

[4] The following letters and reports are attached and are incorporated by reference into this letter: Letter from Karen A. Goebel, Assistant Field Supervisor, U.S. Department of the Interior, Fish and Wildlife Service to George Gentry, Executive Officer, California Department of Fire and Forest Protection, February 25, 2013, attached as Exhibit 5; Letter from Robert Taylor, Fire GIS Specialist, Department of the Interior, National Park Service, to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013, attached as Exhibit 6; Memorandum from Sandra Morey, Deputy Director, Ecosystem Conservation Division, California Department of Fish and Wildlife to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013, attached as Exhibit 7; Letter from Van K. Collinsworth, Natural Resource Geographer, to George Gentry, Executive Officer, Board of Forestry and Fire

reducing the severity and frequency of fires lacked a reasoned justification based on science and substantial evidence.

The 2013 VTP indefensibly treated the diverse ecological regions of the state with the same broad brush. For the scrub systems of Southern California, in particular, its management prescriptions—to the extent they could be gleaned from the DEIR—were bereft of scientific basis and lacked demonstrable efficacy. Furthermore, as EHL explained in its prior submissions to the Board, the assumption that fire safety could be manufactured through vegetation removal is illusory as certain of the strategies contemplated by the VTP would likely result in an increase in fire frequency. Equally concerning, the VTP would encourage the continued expansion of the Wildland Urban Interface ("WUI"), and the resulting vicious cycle of additional home construction in high fire hazard areas.

The DEIR for the 2013 VTP was equally deficient. Wildlife regulatory agencies and environmental organizations including EHL explained that the environmental document defined the Program so vaguely as to preclude reasoned and meaningful assessment of its environmental impacts. The DEIR relied on speculation, not substantial

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Protection, February 21, 2013, attached as Exhibit 8; Letter from Richard W. Halsey, Director, California Chaparral Institute to George Gentry, Executive Officer, Board of Forestry and Fire Protection, January 25, 2013, attached as Exhibit 9; Letter from Richard W. Halsey, Director, California Chaparral Institute and Justin Augustine, Attorney, Center for Biological Diversity to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013, attached as Exhibit 10; Letter from Richard W. Halsey, Director, California Chaparral Institute to George Gentry, Executive Officer, Board of Forestry and Fire Protection, April 8, 2013, attached as Exhibit 11; Letter from Anne S. Fege, Adjunct Professor, Department of Biology, San Diego State University to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 23, 2013, attached as Exhibit 12; Letter from Greg Suba, Conservation Program Director, California Native Plant Society to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013, attached as Exhibit 13; Letter from Frank Landis, Conservation Chair, California Native Plant Society to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 15, 2013, attached as Exhibit 14; and, Letter from Sweetgrass Environmental Consulting to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 24, 2013; attached as Exhibit 15.

evidence, in its analysis of environmental impacts. These agencies and organizations explained that although the VTP had the potential for irreversible environmental damage, there was simply no basis for determining the extent of the impact on the physical environment that would result from the burning or other modification of millions of acres of vegetation.

A peer review of the 2013 VTP and its EIR, conducted by the California Fire Science Consortium ("CFSC") was commissioned by CAL FIRE and the Board. *See* Panel Review Report of Vegetation Treatment Program Environmental Impact Report Draft, California Board of Forestry and Fire Protection in Association with CAL FIRE Agency, August 2014, at 5, attached as Exhibit 16. The CFSC peer review largely echoed the concerns raised by the other scientists, wildlife regulatory agencies and environmental organizations. It criticized the VTP's flawed approach of attempting to collapse the state's varied fire and fuel regimes into a standardized matrix where all treatments would be equally effective in all landscapes. CFSC Peer Review at 5-8. The CFSC explained that without deliberate oversight and revisions, the VTP would result in unassessed environmental impacts and irreparable damage to public agency relationships. The peer review culminated in a recommendation that the VTP undergo a major revision if the Plan was to be a contemporary, science based document. Specifically, the CFSC recommended that the VTP and its EIR explicitly describe how the treatments proposed for private lands fit into the state's overall fire plan, including protection of high value assets, state and local land use planning policies, and federal land use practices. The panel also called for a revised plan to utilize formal adaptive management: rigorous analysis of monitoring data collected in response to implementation of VTP projects. From these monitoring efforts, the CFSC explained, the EIR could be used to implement projects and collect information on the relative efficacy and ecological effects of treatment and vegetation combinations. *Id*.

EHL has a long history of supporting reasonable strategies to protect people and property from the hazards associated with wildfire. Recognizing the critical importance of promoting sound wildfire prevention strategies, EHL offered the assistance of its world-renowned scientists to collaborate and assist on a revised VTP that would better protect natural resources and incorporate the most recent science.

Upon learning that the 2013 VTP had been withdrawn, EHL was optimistic that the Board would take these suggestions and offers of assistance to heart and make substantive modifications to the VTP and revise the EIR in a manner that complied with CEQA. *See e.g.*, Letter from Dan Silver, Executive Director, Endangered Habitats League to Duane Shintaku, Deputy Director, California Department of Forestry and Fire Protection, October 2, 2014, attached as Exhibit 17. Yet, after carefully reviewing the

2016 version of the VTP and the current proposed VTP and DEIR, it is clear that the Board's response to these comments and suggestions is, lamentably, denial. While the post-2013 versions no longer lump varied landscapes together, the vast majority of concerns raised by the CFSC, wildlife regulatory agencies and scientists about the Program and its EIR appear to have been rejected out of hand. Rather than substantively revise the VTP or accurately analyze the environmental harm that would accompany the Program, the VTP and its DEIR merely seek to defend the faulty science, erroneous assertions and conclusions of the prior documents.

CAL FIRE's response to the recent catastrophic fires throughout the state epitomizes the agency's flawed approach to wildfire management largely because it continues to conflate fire prevention and fuel treatment. According to Chief Ken Pimlott, "CAL FIRE is focused on increasing the pace and scale of fire prevention activities, including vegetation management, across the state." "These activities play a critical role in helping reduce the impacts large, damaging wildfires have on our communities." *See* Board of Forestry and Fire Protection and CAL FIRE News Release "Working to Increase Pace and Scale of Wildfire Prevention Activities," December 19, 2017, attached as Exhibit 18. We agree that any sound wildfire plan must include fire prevention techniques that reduce sources of ignitions (e.g., arson watch programs, undergrounding powerlines, building roadside barriers to make it harder for motor vehicles to start roadside fire, regulating commerce in fireworks and teaching people not to operate power equipment in the weeds in red flag weather), but the VTP does not actually include any fire prevention techniques. Instead, the VTP focuses on fuel treatments such as prescribed burns that have been proven to be ineffective in suppressing the weather driven fires that currently plague California. In fact, as fire scientists explain, in southern California, there is no evidence of any inhibitory effect of past fire on subsequent fire. This is because only two percent of the vegetation burns each year and so wildfires rarely encounter burned patches. *See*, "The impact of antecedent fire area on burned area in southern California coastal ecosystems," Journal of Environmental Management, O. Price et. al., April 18, 2012, attached as Exhibit 19. In addition, California shrub and grass fuels accumulate rapidly and are sufficient to carry a repeat fire very soon (e.g., within 1 or 2 years) after previous fire. *Id*.

Moreover, it is critical that the Board recognize there are far less ecologically destructive ways to minimize the harm posed by wildfires. As Robert Hamilton explains,

> The VTPEIR accepts as inevitable the dangerous and irresponsible expansion of housing into California's highest wildfire hazard severity zones, and yet fails to observe that humans have much more control over the methods used to build structures in fire-prone areas than we have over

> wildfires. Nothing in the VTPEIR acts as a disincentive to building new houses within the highest wildfire severity zone, or requires any would-be developer to use only the least-flammable feasible construction methods (both of which would temper the need for extensive fuel-reduction actions). Instead, the VTPEIR prescribes the disturbance and degradation of 600,000 acres of natural communities, over a period of ten years, in part to facilitate expansion of housing into extremely hazardous areas that will only become more so as the climate warms and dries. *See* Letter from Robert Hamilton to Dan Silver, January 5, 2018, submitted under separate cover.

Numerous other experts have weighed in on the ability of vegetation treatment to achieve the state's fire management goals and the environmental impacts of these approaches. Submitted under separate cover and incorporated by reference into this letter are reports prepared by Dr. Wayne Spencer and Dr. Alexandra D. Syphard to California Board of Forestry and Fire Protection, January 10, 2018; letter from CJ Fotheringham, Research Ecologist, USGS to California Board of Forestry and Fire Protection, January 9, 2018; letter from R. Halsey et al., to California Board of Forestry and Fire Protection, January 10, 2018; letter from CJ Fotheringham, Research Ecologist, USGS to E. Hannigan, California Board of Forestry and Fire Protection, May 31, 2016; and letter from Frank Landis, Conservation Chair of the San Diego Chapter of the California Native Plant Society to E. Hannigan, California Board of Forestry and Fire Protection, May 31, 2016. The resubmitted 2016 letters comment on the prior VTP and DEIR, but the comments raised therein remain applicable to the revised VTP and DEIR. We respectfully request that the Final EIR respond separately to each of the points raised in these other letters as well as to the points raised in this letter.

II. The DEIR Fails to Comply With CEQA.

A. The DEIR's Justifications For Failing to Provide a More Detailed Analysis of the VTP's Environmental Impacts Are Groundless.

Among the DEIR's most notable deficiencies is the lack of a detailed accounting of the VTP's environmental impacts. The DEIR attempts to defend its vague analysis by suggesting that the document serves as a first-tier document for later CEQA review of individual projects included in the Program and that further analysis will be undertaken as each project is implemented. DEIR at 2-40; 4-142; 4-186; 4-199; 4-211. This justification is unavailing. Not only does the DEIR improperly defer analysis of ascertainable environmental impacts to a future process, but that future process lacks any workable means for analyzing and mitigating the impacts of individual projects, and effectively shuts out public participation. *Id*. at 4-211.

Under CEQA, the "programmatic" nature of this DEIR is no excuse for its lack of detailed analysis. The DEIR grossly misconstrues both the meaning and requirements of a "program" EIR by suggesting that the broad scope of the VTP plays an important role in determining the appropriate level of detail to include in the DEIR. *See* DEIR at 4-198 ("Effects of fuel reduction on wildlife depend on the specific ecological requirements of individual species and thus are difficult to generalize, especially in a treatment area as large and complex as that considered here."). This approach is flawed, at the outset, because CEQA mandates that a program EIR provide an in-depth analysis of a large-scale project, looking at effects "as specifically and comprehensively as possible." Cal. Code Regs., tit. 14, § 15168(a), (c)(5); (hereafter "CEQA Guidelines"). Indeed, because it is designed to look at the "big picture," a program EIR must (1) provide "more exhaustive consideration" of effects and alternatives than can be accommodated by an EIR for an individual action, and (2) consider "cumulative impacts that might be slighted in a case-by-case analysis." CEQA Guidelines § 15168(b)(1)-(2).

Furthermore, whether a lead agency prepares a "program" EIR or a "project-specific" EIR under CEQA, the requirements for an adequate EIR remain the same. CEQA Guidelines § 15160. "Designating an EIR as a program EIR also does not by itself decrease the level of analysis otherwise required in the EIR." *Friends of Mammoth v. Town of Mammoth Lakes Redevelopment Agency* (2000) 82 Cal.App.4th 511, 533. Even a program-level EIR must contain "extensive, detailed evaluations" of a plan's effects on the existing environment. *Envt'l Planning and Info. Council v. Cnty. of El Dorado* (1982) 131 Cal.App.3d 350, 358. *See Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 723-24 (where the record before an agency contains information relevant to environmental impacts, it is both reasonable and practical to include that information in an EIR). The "extensive, detailed evaluations" required by CEQA are absent from the DEIR.

The DEIR's reliance on future, project-level environmental review is also misplaced. Again, CEQA's policy favoring early identification of environmental impacts does not allow agencies to defer analysis of a plan's impacts to some future EIR for specific projects contemplated by that plan. *See Bozung v. Local Agency Formation Com*. (1975) 13 Cal.3d 263, 282-84; *Christward Ministry v. Superior Court* (1986) 184 Cal.App.3d 180, 194; *City of Redlands v. Cnty. of San Bernardino* (2002) 96 Cal.App.4th 398, 409 (2002). As CEQA Guidelines section 15152(b) explicitly warns, "[t]iering does not excuse the lead agency from adequately analyzing reasonably foreseeable significant environmental effects of the project and does not justify deferring such analysis to a later tier EIR or negative declaration."

Moreover, as discussed below, there is no guarantee in this case that such future, detailed environmental review will happen or, if it does, that environmental impacts will be identified or mitigated. Under these circumstances, a detailed environmental impact analysis must be performed now, prior to the VTP's approval. As the Court of Appeal explained in *Stanislaus Natural Heritage Project v. Cnty. of Stanislaus* (1996) 48 Cal.App. 4th 182, 196, CEQA requires that this environmental review take place before project approval. In *Stanislaus*, the court rejected the argument that a programmatic EIR for a specific plan and general plan amendment could ignore site-specific environmental review because future phases of the development project would include environmental review, stating that tiering "is not a device for deferring the identification of significant environmental impacts that the adoption of a specific plan can be expected to cause." *Id*. at 199.

Because the Board intends to allow unspecified project-level approvals in reliance on this DEIR, and because there is no indication that any meaningful future environmental review will take place, the DEIR must include a detailed, project-level analysis of the impacts that could arise from the implementation of all aspects of the VTP, as well as a meaningful discussion of alternatives and mitigation measures, so the Board and the public can understand the consequences of the VTP before considering whether it should be approved.

B. The DEIR's Description of the VTP Is Vague and Not Finite.

An accurate description of a proposed project is "the heart of the EIR process" and necessary for an intelligent evaluation of the project's environmental effects. *Sacramento Old City Ass'n. v. City Council* (1991) 229 Cal.App.3d 1011, 1023; *see Rio Vista Farm Bureau v. Cnty. of Solano* (1992) 5 Cal.App. 4th 351, 369-370 (project description is the "sine qua non" of an informative and legally sufficient EIR) (citation omitted). Consequently, courts have found that, even if an EIR is adequate in all other respects, the use of a "truncated project concept" violates CEQA and mandates the conclusion that the lead agency did not proceed in a manner required by law. *San Joaquin Raptor/Wildlife Rescue Center v. Cnty. of Stanislaus* (1994) 27 Cal.App.4th 713, 730 (citation omitted). Thus, an inaccurate or incomplete project description renders the analysis of significant environmental impacts inherently unreliable. While extensive detail is not necessary, the law mandates that EIRs should describe proposed projects with sufficient detail and accuracy to permit informed decision-making. *See* CEQA Guidelines § 15124 (requirements of an EIR).

Here, one of the essential defects of this DEIR is its thoroughgoing failure to accurately describe the Program. The DEIR identifies categories of fuel management treatments (e.g., wildland-urban interface; fire break and ecological restoration) and explains that within each of these treatment categories, a menu of treatment activities would be implemented to modify fuels within the landscape. These treatment activities include, for example, prescribed fire, "beneficial" grazing, and herbicide applications. *See* DEIR at 2-2 and 2-23. The scale of the Project is staggering as it would subject about 23 million acres of land throughout the state to fuel management treatments. *Id*. at 2-12. Within a ten-year period, it is estimated that there would be approximately 2,300 projects implemented – approximately 231 projects per year at an average project size of 260 acres. *Id*. Yet, when one attempts to drill down to determine how the Program would actually be implemented, it becomes clear that the Board has no idea which program activities would take place or where they would be implemented. Consequently, the vagueness of the DEIR's description of the VTP creates all sorts of analytical problems.

For example, the DEIR states that the number and type of vegetation treatment activities would be selected based on a number of parameters including the potential for significant adverse impacts and opportunities to conserve desirable vegetation and wildlife habitat. DEIR at 2-35. The DEIR suggests that these parameters would be considered before activity methods are selected, but the document provides no criteria as to how these parameters would be applied. And, as discussed below, the DEIR lacks the necessary analysis of the VTP's environmental impacts. Thus a parameter suggesting that a specific vegetation treatment activity would be selected based on the "potential for significant adverse impacts" is entirely meaningless. Indeed, there is no way to know what the environmental impacts of the Program will be if there is not even a finite, stable project description. *San Joaquin Raptor, supra*, 27 Cal.App.4th 713, 730 (requiring "[a]n accurate, stable and finite project description" in an EIR) (citation omitted). In essence, the Project Description here is no more than an idea – an idea that may be changed in a never-ending variety of ways over the next decade or more.

As another example, the DEIR includes principles for implementing fuel break treatment projects but the principles are so broad and vague as to be meaningless. The DEIR suggests that fuel breaks would be located and designed to help protect critical infrastructure and high value natural resources. DEIR at 4-38. But the DEIR never defines the terms "critical infrastructure" or "high value natural resources." The DEIR also states that the fuel breaks would be constructed to minimize or avoid environmental impacts, but how would the Board decide whether the protection of critical infrastructure should come at the expense of important environmental resources such as special-status plant or wildlife species? This built-in conflict is bound to arise over and over again during the Program's implementation, yet the DEIR does not provide even a hint as to how conflicts such as these would be resolved. Nor does the DEIR provide any indication as to where fuel breaks would be located or how they would be designed. In fact, the DEIR explains that "given the diversity of California fuel types, topography, and weather conditions, general guidelines under this program for standardized fuel width or volume of fuels to remove *would not be feasible*." DEIR at 4-39 (emphasis added). Again, without specificity regarding this critical Program component, there can be no analysis of the VTP's environmental impacts.

Piling even more uncertainty on top of the already vague Project description, this DEIR, like its predecessors, lacks sufficient maps of potential treatment areas. The DEIR explains, for example, that the area to be treated by a wildland urban interface ("WUI") activity was defined through a complex modeling process. DEIR at 2-18. These modeling results are displayed in Figure 2.2-10, a map intended to depict the WUI within the VTP study area. *Id.* at 2-20. Yet, this map is not a serious tool of measurement to identify treatment locations within the WUI areas because it is too small a scale to be useful. There is no logical reason why the maps could not have been printed at a larger scale on multiple pages.[5] More importantly, as Frank Landis explains, the maps are based on an outdated and problematic fire hazard analysis, which, in turn, was based on faulty science. (*See* May 31, 2016 letter from F. Landis). Consequently, the DEIR does not even disclose the location of specific lands that would be treated by the VTP. As Frank Landis explains:

> How can local impacts be analyzed if the time and place affected by any program is not specified? How can cumulative impacts be analyzed if there is insufficient local data on where and when the program occurs, and what is affected? How can landowners determine whether they or neighboring properties are susceptible to the VTP, in case they want to take action? Why does the DEIR show maps that are insufficiently detailed for any landowner to determine whether they are subject to the proposed program or not? *See* May 31, 2016 Letter from F. Landis, PhD, Conservation Chair, California Native Plant Society, at 4, attached under separate cover.

It is especially disconcerting that the VTP relies on deficient mapping because state agencies including the California Department of Fish & Wildlife and the California Native Plant Society have mapped California's vegetation and have created two editions

[5] The DEIR appendix does include a map of each bioregion. But the scale of these maps, which show each bioregion on an 8 ½ by 11 page, is far too small to provide useful graphic information.

of *The Manual of California Vegetation* ("MCV"*)*. *Id*. at 10. Dr. Landis explains that the MCV contains a wealth of information on fire ecology. *Id*. CEQA requires an EIR to include the precise location and boundaries of a proposed project to be shown on a detailed map. CEQA Guidelines § 15124(a). Because the VTP DEIR fails to include this fundamental information, there can be no meaningful evaluation of the Project's environmental impacts.

Perhaps the most problematic component of the DEIR's Project Description though pertains to the Program's approach to the "Implementation" processes. We understand that the VTP is meant to provide an overview of the comprehensive wildfire risk reduction program, but the DEIR must still provide sufficient information to be able to determine how the VTP would be implemented and how it will affect environmental resources. The document suggests that subsequent review would occur during the implementation process (at 2-45), but the Board's consideration of this EIR and the VTP is the only opportunity for the public to understand and weigh in on the big-picture questions that will determine the magnitude of ecological devastation that would accompany this broad Program.

The DEIR states that the VTP includes a built-in mechanism to evaluate the environmental impacts at the project-specific phase. DEIR at 2-45. Yet, there are so many loopholes in the VTP's suggested mechanism, that it is almost impossible to envision that a comprehensive evaluation of the VTP's environmental impacts would *ever* be undertaken.

First, the sheer number of projects that are envisioned to be implemented on a yearly basis and the geographic scope of each project alone would suggest that determining each subsequent activity's environmental impacts would not be subject to a sufficient level of scrutiny. In other words, the multi-step project implementation process – of which the determination of environmental impacts is only one part—would be extraordinarily cumbersome, to put it mildly. The Board contemplates implementing about 230 projects every year at an average project size of 260 acres. DEIR at 2-12. That is about one project for every work day of the year. For each such project, CAL FIRE would have to: (a) prepare a Project Scale Analysis ("PSA"); (b) submit the PSA for three levels of review (county, regional and state); and (c) send the final determination to the Sacramento CEQA Coordinator. DEIR at 2-45-46. Does CAL FIRE even have sufficient staff to undertake this process for each of the 230 projects that are proposed for implementation every year? The DEIR itself answers this question in the negative, stating that one key advantage of the Project compared to the No Project alternative is that the No Project alternative would require the preparation of further

CEQA review – which is "costly, time consuming, repetitive, and *unsustainable from a personnel standpoint*." DEIR at 3-8 (emphasis added); *see also* DEIR at 2-37.

Second, the DEIR makes clear that the VTP has been specifically designed to *avoid* further environmental review. *See* DEIR at 2-37, "This VTP replaces the existing costly, time consuming, and repetitive process of preparing multiple CEQA documents for projects located in forested fuel types. This streamlined process would result in a more efficient use of staff time and finances, leading to CAL FIRE's ability to treat additional acres than they could historically."

Third, despite CAL FIRE's intent to avoid further environmental review under CEQA and its lack of capacity to carry out such review, the DEIR nonetheless outlines a process by which CAL FIRE would determine whether such review would be performed. Not surprisingly, this process is entirely perfunctory. The DEIR explains that a CEQA Project Coordinator would make a final determination as to whether the subsequent activity is consistent with the Program EIR. If it is determined that the subsequent activity falls within the scope of the Program EIR, *then "no additional CEQA documentation would be required*." DEIR at 2-50 (emphasis added). Thus, it would appear that a subsequent activity need only be included in the scope of the Program EIR to escape further environmental review. Due to the excessively broad scope of the VTP and the fact that the DEIR discusses the potential environmental impacts from all projects that could be implemented over a 23 million acre area, it is almost impossible to imagine the Coordinator(s) making a determination that a subsequent activity is outside the scope of the Program EIR. Given the absence of any specific environmental analysis in the Program EIR, the process is effectively designed so that such analysis will never occur.

Fourth, even assuming that a Coordinator intends to undertake an actual evaluation of a subsequent activity's environmental impacts—and there is no assurance that this separate study would ever occur—there is still no indication that this evaluation would result in a project-level environmental review pursuant to CEQA. In fact, the DEIR includes numerous statements indicating that this DEIR satisfactorily evaluates the environmental impacts that would occur from the VTP's projects. For example, it states: (a) the VTP would result in beneficial environmental impacts; (b) the specific projects would be "designed to avoid significant effects;" and (c) the "Coordinator will ensure that the SPR measures reduce impacts to levels that are less than significant." DEIR at 2-36, 4-184, 4-185, 4-191; 4-193, 4-196, 4-198, 4-200, 4-208, 4-237. Statements such as these give the distinct impression that the Board and CAL FIRE have pre-determined that any environmental impacts will be effectively addressed by the measures in the DEIR and that no further environmental review need be undertaken.

Moreover, there is no indication that a Coordinator would have the necessary expertise to evaluate all of the projects' potential environmental consequences – much less to do so at the rate of a project a day. A Coordinator may have sufficient experience to manage an environmental review process, but it is highly unlikely that this person has the expertise to evaluate the effect that a treatment project would have on, for example, a rare, threatened or endangered species, or any of the other myriad impacts that could occur from individual projects throughout the state. Proper environmental review requires experts covering the range of impact categories of which CEQA requires analysis—the opinion of a "coordinator" on these subjects does not pass legal muster. In light of these procedural uncertainties, the DEIR's assurance that future projects would undergo further environmental review is meaningless, misleading, and disingenuous.

It is particularly disconcerting that the Coordinator's review and determination would happen behind closed doors. It is clear that the public would have no opportunity to be notified of, or influence, the process. The public's right to participate in the environmental review process under CEQA is mandated in the statute itself and is vigilantly protected by the California courts that interpret and enforce CEQA. Pub. Resources Code, § 21091. Put simply, the public participation process is a critical tool to ensure that the public has an opportunity to hold agencies accountable for their actions.

Because the DEIR provides no assurance that the environmental impacts from the VTP's subsequent activities will be adequately evaluated or mitigated, the document is grossly deficient. The VTP must be redesigned and the EIR revised to commit to a program that ensures that each subsequent activity will receive full environmental review pursuant to CEQA with full public participation. As part of this program redesign, CAL FIRE must demonstrate that it has sufficient staffing to provide thorough environmental review for all of the subsequent activities given its current staffing and budgetary limitations.

In sum, the total failure of the Project Description makes the rest of the DEIR inadequate as well. Because the specific details of the Program are unknown, its environmental impacts cannot be accurately analyzed, nor can effective mitigation be identified. The fog of uncertainty surrounding the Program and its impacts leads inevitably to deferred analysis and mitigation; over and over again the DEIR states essentially that impacts will be determined as they happen and mitigation will be worked out then. This strategy is not surprising given the inadequate Project Description, but it is unlawful under CEQA.

C. The DEIR's Analysis of and Mitigation for the Impacts of the VTP Are Inadequate.

The discussion of a proposed project's environmental impacts is at the core of an EIR. *See* CEQA Guidelines § 15126.2(a) ("[a]n EIR shall identify and focus on the significant environmental effects of the proposed project"). As explained below, the DEIR's environmental impacts analysis is deficient under CEQA because it fails to provide the necessary facts and analysis to allow the Board and the public to make informed decisions about the Program. An EIR must effectuate the fundamental purpose of CEQA: to "inform the public and its responsible officials of the environmental consequences of their decisions *before* they are made." *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 564. To do so, an EIR must contain facts and analysis, not just an agency's bare conclusions. *Id.* at 568. Thus, a conclusion regarding the significance of an environmental impact that is not based on an analysis of the relevant facts fails to fulfill CEQA's informational mandate.

Although it is clear that the proposed VTP has the potential to cause extraordinary environmental degradation, neither the public nor the Board have any way of knowing the magnitude of this harm. As we explain below, the DEIR fails entirely to provide detailed, accurate information about the Program's significant environmental impacts and to analyze mitigation measures that would reduce or avoid such impacts.

1. The DEIR's Analysis of the VTP's Impacts on Biological Resources is Inadequate.

The DEIR's biological resources chapter is emblematic of the impossible task the Board has created for the DEIR authors by proceeding with CEQA review of a vague and standardless Plan. They must evaluate the environmental consequences of implementing a Plan that has not yet been defined but has the potential to severely affect millions of acres of lands that have biological resources of unparalleled importance. It is therefore not surprising that the DEIR's "analysis" of impacts is a pile of contradictions which renders it utterly useless, as the following paragraph demonstrates.

Regarding the scale of the analysis, the DEIR initially explains that the bioregion was determined to be the appropriate scale to analyze the impacts of the VTP because it allows "for a reasonable analysis of the foreseeable impacts without being neither so large an area as to dilute the impacts or too small an area to magnify the impacts." DEIR at 4-142. The DEIR then completely reverses itself and explains it is not possible to evaluate the VTP's impacts at a bioregional level. DEIR at 4-186 ("For an effect to be considered significant at the bioregional level, the species in question would have to be impacted enough to meet one of the Significance Criteria stated above. The amount of habitat that would have to be adversely modified to cause a substantial adverse effect has not been scientifically determined for most species and is likely unknowable until the threshold has been crossed and the species is in jeopardy.").

Given this hodge-podge of contradictory statements, the DEIR's so-called analysis of biological impacts achieves a result exactly opposite from what CEQA requires. Under CEQA, decisionmakers and the public are to be given sufficient information about impacts and mitigation to come to their own judgments and decisions. *See* Pub. Resources Code, § 21061. This DEIR's strategy is to withhold information and to encourage the public to accept the decision that the agency wants. The DEIR never mentions, let alone analyzes, the actual and specific consequences to vegetation communities and wildlife that would result from this massive Program. The document makes no attempt, for example, to identify the locations of important habitat areas, to identify the specific species that would be impacted, to quantify the expected losses to species and habitat, to analyze the significance of the expected impacts in light of these facts, and finally to propose mitigation measures capable of reducing these impacts to a less than significant level.

A complete revision and recirculation is the only way that this document can come into compliance with CEQA. The VTP and its specific projects must be fully and accurately described, and the critical discussion of biological impacts must explain what will happen on the 10.7 million acres that are designated for Wildland Urban Interface treatments, the 7.4 million acres are designated for ecological restoration treatments, and the 4.0 million acres that are designated for fuel break treatment. DEIR at 4-38; 4-46; 4-54. *See Citizens of Goleta Valley, supra*, 52 Cal. 3d 553, 568 ("[T]he EIR must contain facts and analysis, not just the agency's bare conclusions . . . .") (quotation marks omitted). A sample of some of the most egregious flaws in the DEIR's analysis of impacts to biological resources follows.

(a) The DEIR Fails to Describe the VTP's Biological Setting.

The flaws in the biological resources analysis start at the very beginning, with the description of the Program's environmental setting. The DEIR lacks sufficient information regarding the resources within each bio-region and thus lacks a sufficient baseline for determining impacts. An EIR's description of a project's environmental setting crucially provides "the baseline physical conditions by which a lead agency determines whether an impact is significant." CEQA Guidelines § 15125(a). "Without a determination and description of the existing physical conditions on the property at the start of the environmental review process, the EIR cannot provide a meaningful assessment of the environmental impacts of the proposed project." *Save Our Peninsula Committee v. Monterey Cnty. Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 119. Here, the DEIR fails to identify each bioregion's resources and therefore undercuts the legitimacy of the environmental impact analysis from the outset.

The DEIR does acknowledge that the South Coast bioregion is "the most threatened biologically diverse area in the continental U.S." DEIR at 4-155. There are 476 vertebrate species that inhabit the South Coast Region at some point in their life cycle, including 287 birds, 87 mammals, 52 reptiles, 16 amphibians, and 34 fish. Of the total vertebrate species that inhabit this region, 82 bird taxa, 40 mammalian taxa, 19 reptilian taxa, eight amphibian taxa, and nine fish taxa are included on the Special Animals List. *Id*. Notwithstanding this remarkable biodiversity, the DEIR makes no attempt to identify the specific wildlife species within the South Coast that could potentially be impacted by the VTP. As biologist Robert Hamilton explains, "this is literally the first EIR I have reviewed in 30 years of consulting that fails to include a list of the special-status species potentially occurring in the area proposed for impacts, or any analysis of potential project effects on listed or other special-status species." *See* letter from Robert. Hamilton to Dan. Silver, January 5, 2018, submitted under separate cover.

We can find no plausible explanation for this omission especially because it appears that CAL FIRE has access to specific data regarding biological resources when it states the following: "Over 600 special status wildlife taxa occur in California and over 300 occur in habitats likely to be treated under the VTP." DEIR at 4-198. Certainly the DEIR could disclose the identity of these wildlife taxa, including information as to their habitat requirements.

The document's depiction of vegetation treatment types is equally deficient. The DEIR simply identifies the number of treatable acres within each vegetation type (e.g., tree-dominated, shrub-dominated, and grass-dominated). *See* Table 4.5-16, DEIR at 4-168. But this gross categorization is absurd. There are countless species of trees, shrubs, and grasses and each species would be expected to have very different vulnerabilities to the VTP's treatment activities. As Dr. Frank Landis explains, "California's flora is immensely complex, but the VTP [EIR] analysis oversimplifies it by shoehorning all species into trees, shrubs, and herbs. No knowledgeable fire fighter would assume that ponderosa pine (Pinus ponderosa) and white fir (Abies concolor) have the same fire ecology, but they are all lumped together as "tree-dominated" vegetation (e.g. Table 4.5-16) for the purposes of describing the vegetation in the Sierra Nevada." *See* F. Landis May 31, 2016 letter. In fact, the DEIR confirms this fact. (*See* DEIR at 4-187, "each plant species in a community responds differently to the seasonal timing of prescribed burns or wildfires.") Without some meaningful identification of the resources that would be at risk, the DEIR preparers have no way of determining the Plan's potential environmental impacts or identifying effective mitigation. The revised EIR must include this information.

(b) The DEIR Lacks Thresholds of Significance.

Determining whether a project may result in a significant adverse environmental effect is one of the key aspects of CEQA. CEQA Guidelines § 15064(a) (determination of significant effects "plays a critical role in the CEQA process"). CEQA specifically anticipates that agencies will use thresholds of significance as an analytical tool for judging the significance of a Project's impacts. *Id*. § 15064.7.

Thus, one of the first steps in any analysis of an environmental impact is to select a threshold of significance. Here, the DEIR lacks adequate thresholds of significance for determining impacts on biological resources. This flaw leads to a cascade of other failures: without a proper threshold, the DEIR cannot do its job. For example, the DEIR states that the VTP would result in a significant effect if would contribute to a substantial, long-term reduction in the viability of any native species at the bioregion scale (at 4-182), but the document provides no standard by which to evaluate this impact's significance. It does not define what CAL FIRE considers "substantial" or "long term." This is critical; without a quantitative or otherwise descriptive significance threshold, there is no means by which to conclude whether impacts would or would not be significant, and findings under CEQA section 21081 cannot be properly made (i.e., whether significant impacts are reduced to a less-than-significant level and, if so, how).

Other thresholds of significance appear to be vague, arbitrary and lack scientific justification. For example, the DEIR state that the VTP would constitute a significant impact if a "net effect in a local subsequent activity area was a substantial increase in the population of invasive species AND this occurred on over 10 percent of a WHR [wildlife habitat relationship] lifeform in a bioregion." DEIR at 4-183. The DEIR does not define "substantial." How will the agency determine whether there will be a substantial increase in the population of an invasive species? How did CAL FIRE arrive at 10 percent of a WHR lifeform as its threshold of significance? If a subsequent activity affected 9 percent of the WHR lifeform, why would this not be a significant impact? What exactly is a WHR lifeform? The revised EIR must clearly articulate, define, and provide scientific support for its thresholds of significance.

(c) The DEIR Inappropriately Defers its Analysis of Impacts.

Contrary to CEQA's requirements, analysis of the Plan's impacts on biological resources is left until after project approval. Under CEQA, such deferred analysis and mitigation of these important impacts are unlawful. *See Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359, 1396; *Sundstrom v. Cnty. of Mendocino* (1988) 202 Cal.App.3d 296, 306-30. As the California Supreme Court has explained, environmental review must happen before a project is approved if an EIR is to be anything more than a "post hoc rationalization of a decision already made." *No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 81 (internal quotation marks omitted).

CEQA also requires that an EIR be detailed, complete, and reflect a good faith effort at full disclosure. CEQA Guidelines § 15151. The document should provide a sufficient degree of analysis to inform the public about the proposed project's adverse environmental impacts and to allow decision-makers to make intelligent judgments. Id. Consistent with this requirement, the information regarding the project's impacts must be "painstakingly ferreted out." *Envt'l Planning and Info. Council, supra,* 131 Cal.App.3d 350, 357 (finding an EIR for a general plan amendment inadequate where the document did not make clear the effect on the physical environment). Here, the DEIR provides no analysis of impacts to vegetation communities and only the most superficial analysis of impacts to wildlife.

(i) Vegetation Impacts

There are numerous flaws in the DEIR's approach to analyzing the Project's impact on vegetation communities. First, the DEIR explains that impacts to botanical resources were analyzed by examining special-status plants and communities listed in the California Natural Diversity Database ("CNDDB"). DEIR at 4-183. Yet, according to Robert Hamilton (and as explained further below), the use of CNDDB for purposes of evaluating the VTP's impacts is inadequate because CNDDB does not provide anything close to a full accounting of all the populations of special-status species in California. *See* Robert Hamilton's January 5, 2018 letter. Moreover, as Hamilton explains, the DEIR does not even use the CNDDB system accurately. The CNDDB's list of alliances and associations is actually quite thorough and it contains annotations for those vegetation alliances and associations that have regulatory sensitivity. Specifically, the State of California's *List of Vegetation Alliances and Associations* specifies the sensitive plant alliances and associations of interest to CNDDB. *Id.* Yet, instead of using the *List of Vegetation Alliances and Associations*, and acknowledging the VTP's potential to impact various alliances and associations of high priority to the CNDDB, the DEIR treats the concept of classifying and characterizing plant communities as little more than an afterthought. Because the DEIR fails to adhere to the State's own classification system, the document fails to identify the vegetation alliances and associations that the State recognizes as having special regulatory status. Failure to identify these sensitive resources precludes the possibility of conducting an adequate analysis of the Project's impact on vegetation communities. *See* Robert Hamilton January 5, 2018 letter.

Nor does the DEIR even use CNDDB—or any other method—to evaluate impacts. Indeed, it fails to provide *any* specific analysis at all. Instead, the DEIR generally describes all of the variables that have the potential to come into play when attempting to evaluate whether, for example, prescribed burning would be expected to have a significant impact on vegetation. The DEIR explains that vegetation's response to burning will depend on factors including the season of the burn, the spatial pattern of the burn, the burn size and intensity, the change in fire frequency, and the distribution of vegetation species. DEIR at 4-187, 4-188. The DEIR never bridges the gap from a theoretical overview to a specific analysis of which species in which locations would be impacted by each of the VTP's activities. Instead, it offers up examples. (*See* DEIR at 4-189, "Many chaparral species germinate much better after stimulated by fire such as sugar bush (Rhus ovata), sumac (Malosma laurina), chamise, manzanita (Arctostaphylos spp), yerba santa (Eriodictyon spp.), and ceanothus (Ceanothus spp.) (CAL FIRE, 1981)."). This approach is contrary to CEQA's clear requirements that an EIR be detailed, complete, and reflect a good faith effort at full disclosure. CEQA Guidelines § 15151. The document should provide a sufficient degree of analysis to inform the public about the proposed project's adverse environmental impacts and to allow decision-makers to make intelligent judgments. *Id*. Consistent with this requirement, the information regarding the project's impacts must be "painstakingly ferreted out." *Environmental Planning and Information Council of Western El Dorado County v. County of El Dorado* (1982), 131 Cal.App.3d 350, 357 (finding an EIR for a general plan amendment inadequate where the document did not make clear the effect on the physical environment).

In addition, the DEIR relies on a specious assumption to conclude that the Project would not impact plant communities. The document compares the average size of a VTP subsequent activity (260 acres) to the purported average size of a wildfire (10,000) acres. DEIR at 4-188. Based on this comparison, the DEIR concludes that the VTP would be unlikely to eliminate a sub-population (e.g., of a rare plant species). *Id*. According to Robert Hamilton, this is incorrect. Many rare plant populations occur in small, discrete populations that may be limited to an area of only a few square feet. Therefore, rare plant sub-populations have the potential to occur in the subsequent activity study areas. *See* R. Hamilton January 5, 2018 letter. Without focused rare plant surveys (and mitigation, if rare plants are detected), the DEIR lacks scientific support for its conclusion that the VTP would not impact rare plants.

In lieu of actually analyzing the Plan's impacts on vegetation communities, the DEIR relies on a few mitigation measures to conclude that the Plan's impacts would be less than significant. DEIR at 4-192. However, the DEIR lacks the evidentiary support that such measures will in fact reduce the Project's impacts. Mitigation Measure BIO-2, for example, calls for certain actions to be taken for subsequent activities that "are not deemed necessary to protect critical infrastructure or forest health." DEIR at 4-211. As we explained above, the DEIR never defines critical infrastructure, so how would an implementing entity determine the applicability of the mitigation measure. Moreover, how would vegetation impacts be eliminated in those circumstances when critical infrastructure should be protected?

Mitigation Measure BIO-3 only pertains to shrublands containing native oaks. DEIR at 4-212. Consequently, it provides no protection for other vegetation types such as trees and grasslands. Mitigation Measure BIO-4 calls for the establishment of a buffer zone around special-status animals and plants. DEIR at 4-212. Yet, a measure calling for the establishment of a buffer zone around sensitive species is meaningless since there has been no survey for sensitive species.

Consequently, the DEIR lacks the evidentiary support to ensure that adverse impacts to sensitive vegetation will actually be mitigated as required by CEQA. Quite simply, it appears the DEIR was set up to arrive at this preordained result. A conclusion that a measure will be effective in mitigating an impact must be supported by substantial evidence. *See Gray v. Cnty. of Madera* (2008) 167 Cal.App.4th 1099, 1115-18; *see also San Franciscans for Reasonable Growth v. City & Cnty. of San Francisco* (1984) 151 Cal.App.3d 61, 79 (measures must not be so vague that it is impossible to gauge their effectiveness). The DEIR fails to fulfill this paramount CEQA purpose because it neglects to present any factual support for its cursory conclusions.

The DEIR's failure to evaluate the VTP's impacts on chaparral/sage scrub is particularly troubling as EHL and it scientists along with wildlife regulatory agencies, including the California Department of Fish and Wildlife ("CDFW"), criticized the 2013 VTP EIR for failing to disclose the severity and extent of damage to this unique and increasingly rare community. *See* Letter from Sandra Morey, CDFW, February 25, 2013. As CDFW explained, fire management of California's shrublands has been heavily influenced by policies designed for coniferous forests; however, fire suppression has not effectively excluded fire from chaparral and coastal sage scrub landscapes and catastrophic wildfires are not the result of unnatural fuel accumulations. *Id*. There is also considerable evidence that high fire frequency is a very real threat to native shrublands in southern California, sometimes leading to loss of species when fire return intervals are shorter than the time required to reach reproductive maturity. *Id*. Both common and rare plant species and the habitats they provide are vulnerable to adverse impacts where fire regimes are altered. *Id*. Since chaparral and coastal scrub are adapted to a regime of infrequent, relatively intense, dry season fires, imposition of low intensity cool season fires through prescribed burning can produce undesirable ecological effects and damage vegetation. *Id*. Inasmuch as the current VTP proposes extensive treatment of chaparral/sage scrub lands, the DEIR's failure to analyze how these activities would affect these plant communities is a fatal flaw.

(ii) Wildlife Impacts

The DEIR's pattern of unlawfully deferred and delegated analysis and mitigation is repeated over and again as the DEIR acknowledges that the VTP would cause impacts to wildlife, but fails to perform the required impact analysis. The DEIR begins its discussion of wildlife impacts by explaining that it is difficult to determine the effects of fuel reduction on wildlife because of the size of the treatment area and the complexity of the program. DEIR at 4-198. It goes on to state that responses of wildlife to fuel reduction have not been studied extensively and information is lacking. *Id*. California courts explain that an agency cannot evade its obligate to analyze a project's environmental impacts on the grounds that the project is too large and complex. Following this convoluted reasoning, the greater the environmental harm contemplated by an agency, the lesser the obligation of conducting environmental review. As explained by the Court in *Laurel Heights Improvement Ass'n of San Francisco v. Regents of the University of California* (1988) 47 Cal.3d 376, 399, "[w]e find no authority that exempts an agency from complying with the law, environmental or otherwise, merely because the agency's task may be difficult."

Rather than conduct a thorough analysis of impacts on wildlife as CEQA requires, the DEIR provides cursory and unsupported statements. Although the DEIR asserts the importance of evaluating the temporal and spatial effects and the short-and long-term effects that fire will have on animals (at 4-200), it never actually conducts this analysis. In fact, the DEIR only provides examples of potential impacts and even these examples are contradictory, confusing, and ultimately meaningless for purposes of CEQA compliance. (*See e.g.*, DEIR at 4-198, "the reproduction of California Spotted Owls (CSO) can be negatively impacted by certain management strategies. Increasing habitat heterogeneity, including edge between forest and shrubs, has shown to be beneficial to help support owl and prey habitat. However, forgoing treatment may not always be beneficial, as the viability of CSO populations may be declining due to high-canopy cover loss from high severity wildfire.")

The VTP would have wide-ranging impacts on mammals, reptiles, amphibians, fish, and birds (DEIR at 4-155), but the reader can find no actual evaluation of these impacts in the body of the DEIR. Rather, one must look to the EIR's technical appendix for a discussion of how the VTP might impact wildlife. Initially, CEQA requires that the analysis be presented in the EIR. *See Santa Clarita Organization for Planning the Environment v. County of L.A.*(2003) 106 Cal.App.4th 715, 722 (agency's analysis must be contained in the EIR, not "scattered here and there in EIR appendices"). "Decision-makers and the general public should not be forced to sift through obscure minutiae or appendices in order to ferret out the fundamental assumptions that are being used for purposes of the environmental analysis." *San Joaquin Raptor Rescue Center*, 149 Cal.App. 4th at 659; *see also Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 442 ("The data in an EIR must not only be sufficient in quantity, it must be presented in a manner calculated to adequately inform the public and decision makers, who may not be previously familiar with the details of the project.")

However, even the scant information in the EIR technical appendix is largely a recitation of generic information relating to treatment activities on various orders of species, rather than on the species themselves. Thus, as regards the effect that prescribed fire would have on ground-dwelling invertebrates, for example, the appendix includes just *three-sentences* stating that the direct effects of prescribed fire depend largely on the invertebrates' locations at the time of the fire and fire intensity, which depends, in large part on duff consumption. *Id*. Common sense would dictate that the VTP's effects on wildlife would depend on location and fire intensity, but here too, the DEIR does not tell us which species of invertebrates would be most at risk nor what the direct effects to these invertebrates would be. Nor does the DEIR explain "duff consumption" or how it relates fire intensity

As regards mammals, the sum total of the "impact analysis" is *two-sentences*: "Direct mortality of small mammals as a result of fire are [sic] primarily from heat effects and asphyxiation. Using cooler prescriptions may reduce heat effects." Biological Resources Appendix at pdf pg. 5. Under CEQA, such self-evident ruminations cannot substitute for meaningful analysis. *City of Antioch v. City Council* (1986) 187 Cal. App. 3d 1325. Rather, an EIR must contain analysis sufficient to allow informed decision-making.

The DEIR's analysis of impacts on biological resources is so fundamentally deficient that it does not come close to meeting CEQA's clear requirements. Revisions of the required magnitude will require recirculation of the DEIR. If this DEIR truly reflects the current state of the VTP, then this is not a Program ready for approval. The first step in revising the DEIR must be a serious commitment by the Board to define the VTP in a manner that would allow the Program's impacts to be effectively evaluated.

(d) The DEIR Contains Inadequate Mitigation Measures that Are Unenforceable, Uncertain, and Vague and Thus Do Not Ensure Impacts Will Be Reduced to Insignificant Levels.

CEQA requires an EIR not only to identify a project's significant effects, but also to identify ways to avoid or minimize them. Pub. Resources Code, § 21002.1. An EIR generally may not defer evaluation of mitigation to a later date. CEQA Guidelines § 15126.4(a)(1)(B). Furthermore, for every mitigation measure evaluated, the agency must demonstrate that the mitigation measure either: (1) will be effective in reducing a significant environmental impact; or (2) is ineffective or infeasible due to specific legal or "economic, environmental, social and technological factors." *Friends of Oroville v. City of Oroville* (2013) 219 Cal.App.4th 832, 841-44; Pub. Resources Code, §§ 21002, 21061.1; CEQA Guidelines §§ 15021(b), 15364.

In addition, the lead agency must adopt all feasible mitigation measures that can substantially lessen the project's significant impacts, and it must ensure that these measures are enforceable. Pub. Resources Code, § 21002; CEQA Guidelines §§ 15002(a)(3), 15126.4(a)(2); *City of Marina v. Bd. of Trustees of the Cal. State Univ.* (2006) 39 Cal.4th 341, 359, 368-69. The requirement for enforceability ensures "that feasible mitigation measures will actually be implemented as a condition of development, and not merely adopted and then neglected or disregarded." *Federation of Hillside and Canyon Associations v. City of Los Angeles* (2000) 83 Cal.App.4th 1252, 1261 (italics omitted); CEQA Guidelines § 15126.4(a)(2). Uncertain, vague, and speculative mitigation measures have been held inadequate because they lack a commitment to enforcement. *See, e.g., Anderson First Coalition v. City of Anderson* (2005) 130 Cal.App.4th 1173, 1188-1189 (holding traffic mitigation fee measure inadequate under CEQA due to vagueness in program for implementing required improvements). Here, the DEIR is woefully inadequate because it relies on measures that are unenforceable, uncertain and vague to conclude that the VTP's impacts would be less than significant.[6]

[6] The DEIR identifies a series of "Standard Project Requirements ("SPRs") that are considered minimum standards for each of the individual projects that would be

Indeed, these measures simply do not and cannot reduce to insignificance the severe impacts caused by the Program.

For example, SPR BIO-1 calls for the Coordinator to prepare a summary of all special status species which would be affected by the project and then to conduct a field review to determine the presence or absence of any special-status species. DEIR at 4-211. The fact that this measure requires a study of special-status species does not save the DEIR's analysis; it is too little too late. "A study conducted after approval of a project will inevitably have a diminished influence on decisionmaking. Even if the study is subject to administrative approval, it is analogous to the sort of post hoc rationalization of agency actions that has been repeatedly condemned in decisions construing CEQA." *Sundstrom, supra,* 202 Cal.App.3d 296, 307.

Moreover, this measure relies largely on the California Natural Diversity Database ("CNDDB") to identify species that would be affected by VTP projects. As numerous experts explain, it is not sufficient to rely exclusively on CNDDB. While this data base may identify some of the species that would be impacted by a VTP project, it is highly unlikely to identify all potentially impacted species. (*See, e.g.*, May 31, 2016 letter from F. Landis; February 25, 2013 letter from K. Goebel, United States Fish & Wildlife Service; and January 5, 2018 letter from R. Hamilton, submitted under separate cover). The CNDDB records rely on field biologists to voluntarily submit information on the results of surveys and monitoring. *Id*. As a result, the database is biased geographically towards areas where surveys have been conducted or where survey efforts are greater. Many areas, including private lands where the VTP projects would likely be implemented, have not been surveyed at all. *Id*.

BIO-1 also calls for the Project Coordinator to submit the evaluation of impacts to wildlife agencies with a request for information regarding the known location of any special-status species and information relating to potential avoidance measures. DEIR at 4-211. Yet, simply submitting an evaluation to wildlife agencies does not ensure that impacts would be mitigated. *See* Hamilton Report, January 5, 2018 Report. Without focused surveys, the wildlife agencies would not be able to identify the location of special-status species. Moreover, until the specific special-status species are identified, it

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implemented by the VTP. DEIR at 4-156. The DEIR appears to use the terms SPRs and mitigation measures interchangeably. *See e.g.*, Table 4.1-1 (DEIR p. 4-6): Impact Summary Analysis and Reference Locations which includes a column "Mitigation/SPR" and indicates that impacts to biological resources were to determined to be less than significant after mitigation is applied.

is not possible to develop "avoidance" measures. The entire approach embodied in BIO-1 –the development of future mitigation plans—is contrary to the explicit mandates of CEQA.

"Formulation of mitigation measures should not be deferred until some future time." Guidelines § 15126.4(a)(1)(b). Thus, an EIR is inadequate if "[t]he success or failure of mitigation efforts . . . may largely depend upon management plans that have not yet been formulated, and have not been subject to analysis and review within the EIR." *San Joaquin Raptor Rescue Ctr. v. County of Merced* (2007) 149 Cal.App.4th 645, 670. A lead agency is only allowed to defer mitigation if specific performance criteria are articulated at the time of project approval and if the lead agency shows that mitigation complying with such criteria is both "feasible and efficacious." *Communities for a Better Environment*, 184 Cal.App.4th at 95. Here, mitigation calls for the Coordinator to determine the presence or absence of sensitive species after the Project is approved. Even if the Coordinator were sufficiently trained to identify all species, which is highly unlikely, BIO-1 does nothing to ensure that species would actually be protected during the Project's implementation. Nor is it sufficient to simply coordinate with wildlife agencies and request that they provide information about impacted species and avoidance measures. The agencies have no obligation to respond to the Coordinator's inquiry, and the DEIR provides no explanation as to how impacts will be properly identified and avoided in the event of the agencies' failure to timely respond.

The DEIR fares no better with BIO-2. At first glance this measure appears promising as it suggests that limitations should be placed on vegetation treatment projects in southern California. *See* DEIR at 4-211, 212. Unfortunately, a detailed review of this measure reveals it is nothing more than an empty shell as it contains numerous loopholes. For example, the measure calls for designing a project to prevent vegetation type conversion. Yet, the DEIR never defines "vegetation type conversion; " nor does it provide any indication as to how a project would be designed to prevent such conversion. The measure also lacks definitions for important terms such as "critical infrastructure" and "forest health." It does not provide any criteria for making a determination as to which projects would be necessary to protect forest health. The measure also fails to include any criteria for determining whether vegetation has or has not reached the age of "median fire return intervals." Finally, the measure does not require the Board, or anyone else for that matter, to take any action at all. The closest it comes, in this regard, is a suggestion that the agency take into account wildlife when planning and implementing a project. To compound matters, the current DEIR deleted an important provision that had been included with this mitigation measure in the 2016 DEIR. The 2016 DEIR stated that vegetation treatment projects would "not take place in old-growth chaparral without consultation regarding the potential for significant impacts with the CDFW and CNPS." 2016 DEIR at 4-157. By removing this provision, does the Board intend to eliminate all restrictions in old-growth chaparral?

BIO-4, a measure calling for the establishment of a 50-foot avoidance buffer around any special-status animal, nest site, or den is also ineffective in protecting wildlife resources. Again, without appropriate presence/absence species, there is no way to determine which species are in need of protection. In addition, we query how one can place a buffer around wildlife that are mobile, e.g., mammals, fish, or birds. As the January 5, 2018 Hamilton Letter explains, scientific literature suggests that much larger buffers are needed to protect species including burrowing owl, Swainson's hawk, California spotted owl, numerous reptiles and amphibians, San Fernando Valley spineflower, and numerous at-risk prairie plants.

The DEIR also looks to a series of Standard Project Requirements ("SPRs") that are intended to be implemented at the start of each subsequent activity purportedly to address the Project's impact to biological resources. DEIR at 4-183, 184. Unfortunately, these SPRs, like the mitigation measures, defer necessary analysis, are vague, unenforceable, and lack any assurance that they will be effective in reducing the Project's environmental impacts. For example, the SPRs look to the Project Coordinator to identify all of the special-status species and natural plant communities that require protection. This would involve, among other things, conducting a review of the species' life history, identifying the species in the field, and determining the habitat requirements for each species (including their known or probable locations in the vicinity of the treatment site). DEIR at 4-183, 184. The Project Coordinator would also monitor the effectiveness of the SPRs' and mitigation measures' implementation. If the Coordinator determines that the SPR and mitigation measures are not performing adequately to protect the specified resources, the Coordinator would determine corrective strategies and require their implementation. *Id*. These SPRs reveal several problems. Would the Coordinator be a qualified biologist? If not, how would he be able to identify sensitive species? What experience does he have to evaluate how a particular vegetation treatment will impact sensitive species or to monitor the implementation of treatment activities to determine their impact on species. What knowledge does he have to identify appropriate corrective strategy in the event that mitigation measures are not performing adequately? Moreover, because the SPRs are not included as mitigation measures in the EIR, there is no assurance they will even be adopted or implemented.

The fatal flaw common to all of the DEIR's mitigation measures and SPRs is their failure to include *any* basis to judge their effectiveness. Rather, it appears that these measures are a mere expression of hope that the Board will eventually be able to devise a way to address the VTP's impacts on plant and wildlife. CEQA requires more than that to mitigate significant impacts. *Lincoln Place Tenants Association v. City of Los Angeles* (2005) 130 Cal.App.4th 1491, 1508.

Since the DEIR relies on vague, malleable and non-enforceable mitigation measures and SPRs, it lacks the evidentiary basis to conclude that the VTP's impacts would be reduced to less than significant levels.

2. The DEIR Fails to Adequately Analyze the Project's Air Quality Impacts From the VTP's Prescribed Fire Activities.

The DEIR takes an unorthodox approach to analyzing the air quality impacts from prescribed fire and concludes, incorrectly, that such impacts would be less than significant. Had the analysis been conducted in a manner consistent with CEQA's clear requirements, the DEIR would have found the Project's impacts to be significant which, in turn, would trigger the requirement to adopt feasible mitigation and/or Project alternatives.

According to the DEIR, prescribed fire emissions account for the most significant emission source of the entire VTP. DEIR at 4-109. The DEIR identifies the increase in criteria air pollutant emissions that would occur from prescribed burning under the VTP. *See* Table 4.3-10 at p. 4-109. Not surprisingly, the volume of these emissions is quite large and greatly exceeds the quantitative thresholds of significance established by California's air districts. DEIR at 4-95; 4-99; 4-109. The DEIR explains, however, that prescribed fire emissions differ from most other VTP sources because they occur infrequently and are generally of short duration. *Id*. at 4-95. Consequently, the DEIR relies on alternative significance criteria for prescribed fire. Instead of relying on air district thresholds of significance, the DEIR proposes that a prescribed fire would have a significant impact on air quality if it would produce emissions greater than those produced by a wildfire burning the same acreage. *Id*. at 4-96. The DEIR then establishes the environmental baseline for evaluating the expected air quality impacts from prescribed burns: "the baseline disturbance for most vegetation types in California is fire and [therefore] periodic emissions are expected to occur naturally outside of VTP treatment." *Id*.

The DEIR's use of a future indeterminate baseline (i.e., fire) to calculate the VTP's impacts violates CEQA. CEQA requires "a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation [NOP] is published . . ." Guidelines § 15125(a). In *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* 57 Cal.4th 439 (2013), the

California Supreme Court recognized that, under limited circumstances, a departure from existing conditions (i.e., NOP date) may be appropriate. But only when "justified by substantial evidence that an analysis based on existing conditions would tend to be misleading or without informational value to EIR users." *Id.* at 445. The primary underlying legal principle set forth in the *Smart Growth* case is that the use of a future scenario as an impact baseline should be avoided where the practical consequence of such an approach would be to artificially understate the true environmental consequences of proposed projects. That is precisely what the DEIR's approach does here.

The fundamental problem with the DEIR's approach is the underlying premise that prescribed burning will result in less frequent, smaller (i.e., less acres burned), and shorter duration wildfires over time. DEIR at 4-110. Specifically, CAL FIRE assumes that the VTP would reduce the number of fires and/or burned acres, and, as a result avoid some of the air pollutant emissions associated with wildfire events. *Id.* The DEIR, however, lacks the evidentiary support for this assumption. In fact, the EIR admits there is no scientific support for its assumption. (*See e.g.*, DEIR at 4-110, "there is not currently a direct correlation between implementation of a vegetation treatment subsequent activity and a proportionate reduction in numbers of fires or acres burned.") Fire scientists have debunked the idea that prescribed burning reduces the potential for wind-driven wildfires. *See* Letter from R. Halsey et al., January 10, 2018. Such wildfires frequently burn right over—and beyond—areas that had recently been subject to a prescribed burn. *See*, e.g., *Id.*, Figure 4 (Prescribed burns within the Thomas Fire).

Fire scientists have also shown reducing fuels in shrublands does not correlate with wildfire frequency. As Alexandra Syphard explains, "The VTPEIR attributes the trend of increasing fire hazard to fuel accumulation resulting from fire exclusions policies, but this has not been true for shrublands in the southern part of the state, which on the contrary, have experienced unprecedented high fire frequencies that well exceed historical conditions (Keeley et.al 1999, Syphard et al.)" *See*, Letter from A. Syphard, Ph.D. to G. Gentry, February 25, 2013 at 2, attached under separate cover. There is simply no evidence for the DEIR's proposition that every acre of prescribed burn will eliminate an acre of wildfire. Based on its flawed reasoning, the DEIR therefore incorrectly concludes that the substantial increase in emissions of criteria air pollutants resulting from prescribed fire would be less than significant because prescribed fire emissions would not exceed wildfire emissions. DEIR at 4-110.

The DEIR's faulty reasoning results in a substantial underestimation of the Project's air quality impacts. Because there is no evidence that prescribed burns reduce the potential for major wildfires, there is also no basis for the DEIR to conclude that the VTP's air pollutant emissions would be less than significant merely because they might not exceed the amount of emissions generated by a hypothetical wildfire. Because the location of future wildfires is so unpredictable, the most likely scenario is that there would be emissions from prescribed burns *and* from future wildfires. Existing conditions, rather than a hypothetical future scenario (i.e., wildfire) should have been the basis for determining the significance of the VTP's air quality impacts.

The DEIR also fails to analyze the threat to public health from prescribed burns. The hazards chapter of the DEIR acknowledges that prescribed burning produces smoke which may create hazards for people if the activity is not carefully managed. DEIR at 4-328. However, neither the air quality chapter or the hazard chapter of the DEIR provide *any* analysis of these impacts. In lieu of actually analyzing the effect that smoke inhalation from prescribed fires would have on public health, the DEIR looks to a mitigation measure that would allegedly reduce the Project's impacts to a less than significant level. DEIR at 4-328. Mitigation Measure FBE-2 calls for the project coordinator to post signs along roadways and to develop a list of smoke sensitive persons and to contact them prior to burning. *Id*. The DEIR provides no explanation as to how CAL FIRE would obtain its list of smoke sensitive persons. Nor does it explain how a list of smoke sensitive persons would protect public health during a prescribed burn. The EIR's conclusion that a weakly defined notification program would reduce the health effects of smoke from prescribed burns is pure speculation without scientific support.

A conclusion regarding the significance of an environmental impact that is not based on an analysis of the relevant facts fails to fulfill CEQA's informational goal. *See Stanislaus Natural Heritage Project*, 48 Cal.App.4th at 182; *Citizens of Goleta Valley*, 52 Cal.3d at 568. The DEIR fails to fulfill this paramount purpose of CEQA, both because it neglects to present all relevant facts relating to the Project's potential to harm public health, and because its cursory conclusions are based upon no analysis.

In order to serve as an informational document, the VTP should have provided a thorough description of how smoke inhalation affects public health. We can find no logical explanation for this omission particularly because the DEIR references two documents that discuss the effect of smoke on public health. *See* Smoke Management Guide For Prescribed and Wildland Fire, National Wildfire Coordination Group, 2001 and the U.S., EPA's Interim Air Quality Policy on Wildland and Prescribed Fires, 1998. It is not enough for the DEIR to simply refer to outside documents that summarize the health effects of smoke; CAL FIRE is required to include this important information in the EIR. CEQA obligates a lead agency to present the information in an accessible manner. As the California Supreme Court put it in *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 443, "The question is [] not whether the project' s significant environmental effects *can* be clearly explained [in a brief], but whether they *were* explained in the EIR." (emphasis in original).

Had the DEIR conducted a thorough analysis of the Project's potential to cause adverse health effects, it would have determined such impacts were significant and been obligated to identify feasible mitigation measures. Yet, it does no such thing. There are techniques that could reduce emissions that cause smoke-related health impacts that could be adopted as mitigation measures. In fact, the DEIR casually acknowledges certain of these techniques, *but it never commits to actually implementing such measures*. For example, CAL FIRE could reduce emissions by (1) burning only when specific fuel conditions (specifically fuel moistures of the live and dead fuels) and meteorological conditions are present, thereby controlling the quantity and location of smoke, and the time spent in each combustion phase; (2) reducing the burn area (burn concentrations, isolating fuels, mosaic burning); (3) scheduling burning before new fuel appears (burning before fall litter, burning before green-up); (4) increasing combustion efficiency (burning piles and windrows, backing fires, dry conditions, rapid mop-up, aerial ignition/mass ignition); and (5) taking measures to increase the flaming period and decrease the smoldering duration. DEIR at 4-93; 4-94; 4-110. Clearly, because the DEIR mentions these techniques for reducing emissions from prescribed fire, they must be feasible. Consequently, CAL FIRE can and should adopt these measures.

Finally, it is important to point out that had the DEIR correctly acknowledged the Project's significant air quality impacts, it would have been required to examine alternatives to the VTP that reduce emissions from prescribed fire. Because the primary source of the VTP's criteria air pollutant, toxic air contaminant, and as discussed below, greenhouse gas emissions, is prescribed fire, the elimination of this vegetation treatment would necessarily eliminates these emissions. In section II.D.3 of this letter, we identify an alternative to the VTP that *does not* include prescribed fire.

3. The DEIR Fails to Adequately Analyze or Mitigate the Project's Contribution to Climate Change.

Analysis of the Project's climate change impacts is particularly important because existing conditions are such that we have already exceeded the capacity of the atmosphere to absorb additional greenhouse gas ("GHG") emissions without risking catastrophic and irreversible consequences. Therefore, even seemingly small additions of GHG emissions into the atmosphere must be considered cumulatively considerable. *See Communities for a Better Environment v. Cal. Resources Agency* (2002) 103 Cal.App.4th 98, 120 ("[T]he greater the existing environmental problems are, the lower the threshold for treating a project's contribution to cumulative impacts as significant."); *see also Center for Biological Diversity v. National Highway Traffic Safety Administration* (9th Cir. 2007) 508 F.3d 508, 550 ("[W]e cannot afford to ignore even modest contributions to global warming.").

According to the DEIR, prescribed fire treatments would be the primary driver of GHG emissions contributions from the VTP's subsequent activities. DEIR at 4-228, 229. Given this fact, coupled with the severity of the climate crisis, we would expect the DEIR to have thoroughly analyzed the effect that GHG emissions from prescribed burns would have on the changing climate. Unfortunately, the DEIR provides a superficial analysis before concluding that any impacts would be less than significant.

The DEIR begins its analysis of the Project's GHG emissions with a few unsubstantiated statements. First, the document asserts that "in general, the net emissions from prescribed fire are considered to be of relatively smaller quantity than those that would be produced by wildfire (EPA 1995)." DEIR at 4-227. Other than a citation to a 22-year old EPA study, the DEIR provides no justification for this assertion. We did find one sentence pertaining to this issue in the DEIR's technical appendix but this sentence raises more questions than it answers. The appendix states that prescribed fire emissions are typically much less than those created by wildfires due to less "available fuel" during prescribing burning. Appendix H at pdf p. 2. It is our understanding that the VTP proposes prescribed fire specifically to eliminate or substantially reduce available fuel from a landscape. *See e.g.*, DEIR at 2-2, 2-5, 2-10, 2-34. If this is the case, why would a landscape proposed for a prescribed fire treatment have less available fuel than a landscape that experiences a wildfire?

Second, in its discussion of thresholds of significance, the DEIR asserts that historic emissions from wildfires in California's forests, shrublands, and grasslands were substantially higher than current emissions (Stephens, et, al. 2007). DEIR at 4-229. Other than citing a 2007 report, the DEIR fails to explain the basis for this statement or what it means for the analysis. An assumption that emissions from historic wildfires were "substantially higher" than current emissions is meaningless without a definition of "substantial." Even if the DEIR's assumption was accurate for 2007, it must be updated to reflect the last decade of California wildfire events. There has been increased forest fire activity across the west in recent decades due to a number of factors including the legacy of fire suppression and climate change.[7]

[7] *See* Impact of anthropogenic climate change on wildfire across western U.S. forests, J. Abatzoglou and A. P. Williams, available at:

Third, the DEIR asserts that ". . . it is reasonable to assume that the collection of subsequent activities conducted at the scale of the program will modify wildland fire behavior by reducing the risk of ignition or the potential size and severity of wildland fire in the treated areas and adjacent landscape . . . ". DEIR at 4-229. As we explained in the air quality section of this letter, the DEIR lacks the evidentiary support that the Project will reduce the size and severity of wildland fire. In order for the DEIR to accurately characterize current GHG emissions from wildfire and to evaluate the extent of GHG emissions from the VTP, the DEIR must rely on scientific and up-to-date assumptions.

Similar to the faulty approach taken in the DEIR's air quality analysis, the GHG chapter relies on a flawed threshold of significance and an improper baseline for evaluating the VTP's contribution to climate change. The GHG chapter proposes that a prescribed fire would result in significant GHG and climate change impacts if subsequent activities would produce emissions greater than those produced by a wildfire burning the same acreage. DEIR at 4-231. The problems with this approach are two-fold. First the DEIR asserts that a 260-acre wildfire would generate 510,030 million tons per year of GHG emissions (at 4-231 and 4-232), but it never explains how it arrives at this figure.[8] Second, and more importantly, the DEIR errs because it uses wildfire as the baseline for evaluating the Project's climate change impacts, rather than existing conditions as CEQA generally requires. And, as we explained, the DEIR's underlying premise that prescribed burning will result in less frequent, smaller, and shorter duration wildfires—much less an acre for acre reduction in wildfires—is baseless.

The DEIR ultimately determines that GHG emissions from prescribed burns (298,070 million tons per year) would be less than those from wildfire (510,030 million tons per year), suggesting that the Project would not result in a considerable contribution to GHGs and would result in a less than significant impact.[9] DEIR at 4-233, 4-235. Because there is no evidence that prescribed burns reduce the potential for wildfires, there is also no basis for the DEIR to conclude that the VTP's GHG emissions would be less than significant merely because they might not exceed the amount of emissions

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http://wildfiretoday.com/documents/Fires_Climate_Change.pdft, accessed December 19, 2017.

[8] DEIR Appendix H also arrives at this figure, but the document does not include any assumptions or a description of the methodology that was used to calculate wildland fire emissions.

[9] The DEIR does not explain how it determined that prescribed burn treatment activities would generate 298,070 million tons per year of GHG emissions.

generated by a hypothetical wildfire. An accurate analysis would have identified the increase in GHG emissions from prescribed burns together with the VTP's other treatment activities (298,745 million tons per year) as a significant impact. DEIR at 4-235.

Toward the end of the DEIR's analysis, the DEIR looks to a few mitigation measures that are "built into the VTP" to ensure that the VTP's treatment activities would generate fewer emissions than a similar size wildfire. DEIR at 4-235. These measures are vague, illusory, and unenforceable. MM AIR-1, for example, calls for pre-activity modeling, consultation with the air district, and then attempting to implement the district's recommendations to reduce emissions. DEIR at 4-235. This measure will do nothing to reduce GHG emissions as it addresses criteria air pollutant, not GHG, emissions. DEIR at 4-115. Moreover, even if this mitigation measure addressed GHG emissions, there is no assurance that consultation with the air district would result in a reduction in GHG emissions.

The DEIR also looks to MM AIR-2 (actually SPR AIR-2) which requires the submittal of a smoke management plan. DEIR at 4-235; 2-51. SPR-AIR-2 provides no explanation as to how a smoke management plan will reduce GHG emissions; instead it refers to Appendix J. Appendix J does not provide evidence that the measure would reduce GHG emissions. Instead, it simply states that if subsequent treatment activities have complied with CEQA, no additional narrative need be prepared, i.e., no smoke management plan need be prepared. *See* Appendix J at pdf page 17 (page 5 of the sample smoke management plan). As discussed in Section IIB of this letter, the VTP has been explicitly designed to avoid further environmental review. Consequently, there is no assurance SPR AIR-2's requirement to submit a smoke management plan will translate into a reduction in GHG emissions.

The EIR must be revised to provide a legally adequate analysis of the Project's GHG impacts and identify feasible mitigation as these impacts are certain to be significant.

4. The DEIR Fails to Adequately Analyze the Project's Visual/Aesthetic Impacts.

Under CEQA, it is the State's policy to "[t]ake all action necessary to provide the people of this state with . . . enjoyment of aesthetic, natural, scenic, and historic environmental qualities." Pub. Res. Code § 21001(b). Thus, courts have recognized that aesthetic issues "are properly studied in an EIR to assess the impacts of a project." *The Pocket Protectors v. City of Sacramento* (2004), 124 Cal. App. 4th 903, 937 (overturning a mitigated negative declaration and requiring an EIR where proposed project potentially affected street-level aesthetics).

The accepted approach to analyzing visual and aesthetic impacts is as follows: (1) characterize the existing conditions of the project site and the surrounding area by photograph and description, and select key viewpoints within the area, including scenic corridors and landscapes; (2) describe the criteria for significance thresholds; (3) use photomontages or visual simulations to illustrate the change in character of the project site before and after project implementation; and (4) identify feasible mitigation measures and alternatives to reduce or eliminate significant impacts. Where mitigation measures are proposed, use the simulations to illustrate the change in character before and after project mitigation measures are imposed. With the exception of thresholds of significance—which the DEIR does not bother to apply—the DEIR omits every one of these key components.

The DEIR's purported analysis of the Project's visual impacts is crippled in large part because the document fails to describe the visual setting. The VTP proposes vegetation treatment on about 23 million acres throughout California's natural lands. Consequently, the DEIR should have showed the reader – both in text and in photographs—what this land actually looks like. The DEIR does no such thing. In a stunning display of understatement, the DEIR merely states: "Public and private lands contain many outstanding scenic landscapes. Visual resources in these landscapes consist of land, water, vegetation, wildlife, and other natural or manmade features visible on public lands." DEIR at 4-67. This bland and utterly characterless description of California's natural lands makes no honest attempt to capture the striking scenery of the state.

Instead, the DEIR takes the opposite tack. The sum total of the DEIR's photographic depiction of the Project's study area contains exactly *two* photographs of the same location: the first shows a pine forest before a vegetation treatment while the second shows the same site after treatment. DEIR at 4-69. The DEIR should have photographed varying landscapes throughout the state, especially of course, scenic locations. The photographic representation of the VTP study area is critical as it should form the basis of the entire visual impact analysis, i.e., photomontages or visual simulations are needed to illustrate the change in character of the Project study area before and after Project's implementation. The DEIR's deliberate misrepresentation of the area's visual setting alone warrants recirculation of the DEIR.

There can be no doubt that the VTP's extensive treatment activities will visually degrade the natural environment. Yet, rather than select key scenic viewpoints throughout the VTP study area (i.e., the entire state of California), the DEIR refers exclusively to impacts from scenic highways. DEIR at 4-67. This is undoubtedly an important set of impacts to consider, but it is far from the entire picture. The DEIR ignores altogether vantage points from other public locations such as wilderness areas and recreation sites such as parks and trails. The revised EIR must show how vegetation treatments will impacts views and vistas from all important scenic viewpoints; not just highways.

Moreover, the DEIR's "analysis" of impacts to motorists is entirely deficient because it does not provide visual simulations that show how the various vegetation treatments would alter the overall appearance of the land. Instead, it presents tables of data that have no practical value in evaluating the Project's visual impacts. Specifically, the DEIR attempts to estimate the amount of each type of vegetation type (i.e., tree, shrub, and grass) that occurs along scenic roads within each bioregion.[10]

The DEIR then relies on arbitrary numerical thresholds to conclude that the Project's visual impacts would be less than significant. The DEIR asserts that any shrub or grass area blackened from prescribed fire, mechanically disturbed by heavy equipment, or treated with herbicides within the viewshed of a scenic highway would be considered a potentially significant effect. DEIR at 4-71. However, the DEIR does an immediate 180 degree turn and concludes that any impacts on shrub and grassland would be less than significant. *Id*. at 4-72. It lists two key reasons: both of which lack any explanation, let alone scientific support. First, it asserts that shrub and grass viewshed acres are less than two percent of the overall potentially treated acres. *Id* at 72. Second, it states that it is highly unlikely that the vegetation treatments causing visual impacts would exceed more than 10 percent of the scenic highway's viewshed acreage within any bioregion in any 10 year period. *Id*. The DEIR never explains why it relies on these arbitrary numerical thresholds of significance that bear no relationship to thresholds

[10] As regards the South Coast bioregion, for example, the DEIR explains that there are 190 miles of scenic roads and travelers along these road have views of 16,598 acres of trees, 23,114 acres of shrubs, and 4,673 acres of grasslands. DEIR Table 4.2-2, p. 4-70. The DEIR states that it derived these statistics by using a Digital Elevation Model. DEIR at 4-69. However, despite a thorough review of the DEIR and its technical appendix, we could find no explanation of how this model arrived at these statistics.

identified in the DEIR.[11] If the DEIR intends to rely on these numerical thresholds, it must provide some evidence that they would protect the environment. California courts are clear on this issue. In evaluating a project's impacts under CEQA, an agency must address the actual impacts of a project and cannot hide behind metrics obscuring evidence of those impacts. *Protect Amador Waterways*, 116 Cal.App.4th at 1110-11 (finding that narrowly designed significance standards improperly foreclose complete consideration of a project's impacts). In its current form, the DEIR reads as if the preparers are just guessing at what might constitute a significant impact.

The DEIR's approach in evaluating the Project's impact on tree vegetation is even more deficient. Here, the DEIR simply asserts that treatments of trees will retain most of the existing overstory canopy. Consequently, the natural character of the trees would remain and impacts would be less than significant. DEIR at 4-71. Here too, the DEIR offers no evidence to support its less than significant conclusion.

5. The DEIR Fails to Adequately Analyze or Mitigate the Project's Water Quality Impacts.

The DEIR neglects to adequately examine the Project's impacts on water quality. The document devotes the bulk of the water quality chapter to describing the location of where treatment activities will occur around the state. The document also describes "generalized water quality impacts" from the various treatment activities. The DEIR never, however, does the hard work of actually analyzing how the various treatment activities would affect impaired water bodies around the state. Rather, the sum total of the DEIR's "analysis" of the Project's potential to violate water quality standards or degrade water quality consists of only two sentences:

> Potential significant impacts from the proposed program activities include violating water quality related to the following water quality objectives: suspended sediment, settleable material, turbidity, oil and grease, temperature, and potential toxicity from pesticides. Violations of water quality standards would most likely be associated with all proposed program activities, but particularly prescribed fire,

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[11] The DEIR identifies three thresholds of significance, none of which have a numerical component: (1) Have a substantial adverse effect on a scenic vista; (2) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway; (3)Substantially degrade the existing visual character or quality of the site and its surroundings;

mechanical treatments, herbivory, and herbicide activities proximal to water course. DEIR at 4-417, 418

The DEIR offers up an excuse for its lack of analysis: "modeling water quality impacts is too difficult." DEIR at 4-424. As we have explained, as agency may not avoid impact analysis because the task is too difficult. *Laurel Heights Improvement Ass'n of San Francisco v. Regents of the University of California* (1988) 47 Cal.3d 376, 399.

The DEIR's mitigation measures for the Project's water quality impacts confirm that the document has deferred its impact analysis. HYD-2 calls for the Project Coordinator to request information from the Regional Water Quality Control Board ("RWQCB") regarding the potential for significant water quality impacts. DEIR at 2-63. However, the requirement to evaluate the Project's impacts rests with CAL FIRE, not the RWQCB. Moreover, as discussed above, this impact analysis must be included in the DEIR, not deferred until after Project approval. CEQA Guidelines § 15151.

The DEIR also ignores altogether the project's potential water supply impacts. The DEIR acknowledges that fire can impact water supply. DEIR at 4-330. It stands to reason, therefore, that prescribed fire could also impact water supplies. Unfortunately, the DEIR fails to even identify, let alone analyze these potential effects.

The revised DEIR must provide a thorough analysis of the Project's water quality and water supply impacts. If this analysis reveals significant impacts, which appears quite likely, the EIR must identify feasible mitigation measures and/or alternatives capable of reducing or avoiding these impacts.

D. The DEIR's Analysis of Alternatives Inadequate.

A core substantive requirement of CEQA is that "public agencies should not approve projects as proposed if there are feasible alternatives . . . which would substantially lessen the significant environmental effects of such projects." Pub. Resources Code, § 21002; *see also* CEQA Guidelines §§ 15002(a)(3), 15021(a)(2), 15126(d); *Citizens for Quality Growth v. City of Mount Shasta* (1988) 198 Cal.App.3d 433, 443-45. Accordingly, a major function of the EIR "'is to ensure that all reasonable alternatives to proposed projects are thoroughly assessed by the responsible official.'" *Laurel Heights, supra*, 47 Cal.3d 376, 400 (quoting *Wildlife Alive v. Chickering* (1976) 18 Cal.3d 190, 197). To fulfill this function, an EIR must consider a "reasonable range" of alternatives "that will foster informed decisionmaking and public participation." CEQA Guidelines § 15126.6(a). "An EIR which does not produce adequate information regarding alternatives cannot achieve the dual purpose served by the EIR . . . ." *Kings County Farm Bureau*, *supra*, 221 Cal.App.3d 692, 733.

In addition, under CEQA, readers must be able to "evaluate [alternatives'] comparative merits." *Kings County Farm Bureau, supra*, 221 Cal.App.3d 692,733 (absence of comparative data in EIR precluded meaningful consideration of alternatives). A thorough comparison of the Program's alternatives' impacts is therefore crucial to a successful environmental document. This evaluation "shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project." CEQA Guidelines § 15126.6(d).

The DEIR for the VTP fails to heed these basic mandates. First, while the document purports to identify four alternatives, these alternatives are so similar that they become identical for purposes of environmental review. Second, the DEIR's perfunctory comparative analysis of the VTP alternatives fails to adequately distinguish the environmental impacts of each option, to the extent there are differences. Finally, the DEIR fails to identify a feasible, less environmentally damaging alternative for managing wildfire risk in California.

1. The DEIR Fails to Consider A Reasonable Range of Alternatives.

Other than the No Project Alternative, the DEIR presents four alternatives that are extraordinarily similar. Indeed, each alternative includes identical vegetation management treatments: prescribed fire, mechanical, manual, herbivory and herbicide applications. The only difference between each alternative and the proposed VTP is the locations of the areas that would be treated and the times of these treatments. [12] DEIR at 3-15; 3-21; 3-25.

Alternative A would treat vegetation within the WUI only; Alternative B would treat vegetation within the WUI and Fuel Breaks; Alternative C would treat vegetation within Very High Hazard Severity Zones; and Alternative D would treat vegetation on all of the lands within the VTP but would limit the timing of prescribed burns to reduce the Program's air quality impacts. In comparison to the proposed VTP which would treat about 23 million acres, the remaining three geographic alternatives would have substantially reduced footprints. DEIR at 3-10. "Alternative A: WUI Only" would treat

[12] Alternative D: Reduction of Prescribed Fire Treatments to Reduce Air Quality Impacts calls for allowing prescribed burns in non-attainment areas only on "burn days." DEIR at 3-32.

about 10 million acres; "Alternative B: WUI and Fuel Breaks" would treat about 14 million acres; and "Alternative C: Very High Hazard Severity Zone" would treat about 11.8 million acres. *Id*. at 3-16; 3-21; 3-26.

However, because the *annual* area treated under the alternatives is virtually identical, the DEIR asserts that each of the alternatives would pose nearly identical environmental risks to the VTP. DEIR at 4-209; 4-210. This approach is untenable. Since the primary purpose of an alternatives analysis under CEQA is to explore different options to proposed actions that will adversely affect the environment, analyzing only slight variations of the same proposal – all of which have essentially identical environmental effects – does not constitute an adequate alternatives analysis. *Laurel Heights, supra,* 47 Cal.3d 376, 403 (purpose of an EIR's alternatives analysis is to identify ways to reduce or avoid significant environmental effects); CEQA Guidelines § 15126.6(c) (agency should analyze alternatives that "could avoid or substantially lessen one or more of the significant effects."); Pub. Resources Code, § 21002 (same).

To the extent that the Board believes it has no obligation to consider alternatives other than vegetation treatment because the Program allegedly results in no significant environmental impacts, the agency is mistaken. As this letter clarifies, the only reason that the DEIR determines the Program would not result in significant environmental impacts is that the document fails to conduct the necessary examination. Had the DEIR conducted a thorough investigation of the VTP's environmental impacts, the Board would be compelled to conclude that the Program will cause extensive adverse effects.

2. The DEIR Fails to Conduct the Necessary Comparative Analysis of the Alternatives' Environmental Impacts.

CEQA requires an EIR to include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed Project. CEQA Guidelines § 15126.6(d). Yet, the DEIR's perfunctory and uninformative "analysis" here makes it impossible to determine which, if any, of the alternatives would effectively reduce the Program's significant environmental impacts.

Indeed, the DEIR provides no actual analysis of each alternative's impact on the environment. Instead, it merely asserts the overall impacts of Alternatives A, B and C would be similar to, or even *more impactful,* than the proposed VTP.[13] DEIR at 4-210.

[13] In addition to being incorrect, the DEIR's conclusion that each alternative would have identical impacts to the VTP, is wholly unsupported by facts or *any* analysis. Instead of supplying a thorough comparison of the environmental impacts of each alternative, the

The DEIR reaches this contrived conclusion because the agency has crafted the alternatives so that each one would treat the exact same amount of acreage (60,000 acres) every year with identical vegetation treatment activities expected to occur. DEIR at 4-209; 210.

The DEIR's cursory approach is no substitute for the in-depth discussion comparing each alternative's impacts that the law and common sense require. In order to be adequate, the DEIR must contain enough information to define the issue and provide a clear basis for choice between the alternatives. The alternatives that calls for focusing treatments in the very high fire hazard severity zone or only within the WUI would appear to be logical, less environmentally damaging alternatives since they would concentrate treatments in smaller geographic areas. DEIR at 4-210. Yet, because the DEIR provides no way to distinguish between the impacts caused by the alternatives and those caused by the VTP, the alternatives' analysis thus becomes a meaningless exercise.

3. There are Valid Alternatives to the VTP That Are Far Less Environmentally Damaging.

Given that each of the DEIR's alternatives include identical vegetation treatment strategies, it is clear that the Board believes that the VTP is the only valid approach to prevent wildfires. However, there are far more effective methods to minimizing wildfire, that would be less environmentally harmful, yet these are completely ignored in the DEIR. The most effective way to protect lives, property, and the natural environmental from wildfire is through a comprehensive approach that focuses on fuel modifications within and directly around communities at risk, ignitability of structures and effective land use planning.

To this end, EHL requests that CAL FIRE evaluate an alternative to the VTP that is modeled after the Fire Management Plan ("SMM Plan") prepared by the Santa Monica Mountains National Recreation Area ("SMMNRA"). *See* Fire Management Plan, Santa Monica Mountains National Recreation Area, June 7, 2016, attached as Exhibit 20. Similar to the VTP, the SMM Plan provides a framework for the management of wildland fire. However, the SMM Plan takes a very different approach to wildland fire management than does the VTP as it is ecologically based and includes as a top priority

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document merely asserts, as regards biological resources for example, that all impacts would be expected to be similar in nature to those from the proposed VTP. DEIR at 4-210.

conservation and restoration. SMM Plan at 1, 17. To this end, the SMM Plan does *not* include prescribed fire or other landscape level vegetation treatments on its properties. In fact, prescribed fire has not been used since 2005 because it has been determined to *not* be the most effective method to meet the park's resource management or strategic fuel objectives (Moyes et al, 2005; SAMO FMH ANGR biomass plots; Keeley et al, 2009). *See* SMM Plan at 29 (emphasis added). To this end, the VTP EIR must evaluate an alternative that eliminates landscape-level treatments (prescribed fire, grazing, mastication, herbicides, etc.) in shrublands, and particularly prescribed fire in chaparral, while maintaining defensible space and well-placed, strategic fuel breaks for access purposes.

The SMM Plan includes the following fuels management actions, including community education, that are tied to specific goals of the U.S. Department of the Interior Office of Wildland Fire's National Cohesive Wildland Management Strategy as follows:

1. Restore and Maintain Landscapes: Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.

   - Focus on fine fuels management and ignition prevention to reduce wildfire risk and extend fire return intervals

   - Maintain maximum shrub canopy cover and minimize soil disturbance to reduce establishment of invasive, non-native fine fuels, but recognize that shrub fuels need to be managed when they threaten safety.

   - Reduce annual clearing in fuel modification zones that extend beyond 100' if fire behavior modeling demonstrates that safety zone guild lines are met with less than 100' clearance.

   - Utilize existing roads, trails and hardscape to create defensible or strategic space

   - Coordinate fuel modification with invasive species control

   - Work to create ignition resistance at strategic locations and collaborate on prevention of fire starts

- Work with communities on appropriate fuel modification techniques and standards

2. Create Fire-Adapted Communities: Human populations and infrastructure can withstand a wildfire without loss of life and property.

    - Work with communities to educate them on the importance of house-out defensible space, structural ignition resistance, and the hazard of “urban” fuels

    - Work with communities on evacuation planning and emergency shelter-in-place for high risk locations

    - Work with communities to implement fuel reduction projects that exceed the ability of individual community members to carry out

3. Respond to Wildfire: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

    - Minimize area burned while providing for firefighter safety and avoiding damaging suppression tactics

    - Use suppression tactics that are consistent with fire behavior (e.g. do not bulldoze lines that cannot be used for backfire operations or will be jumped by spotting)

    - Work with county fire collaboratives on early detection technology and response in critical locations

The revised DEIR should evaluate an Alternative to the VTP that incorporates the aforementioned fuel management actions that have been successfully implemented by SMMNRA. The Alternative should also include a commitment to work with local agencies to ensure the implementation of appropriate fire prevention techniques that reduce sources of ignitions (e.g., ArsonWatch, undergrounding powerlines, building roadside barriers to make it harder for motor vehicles to start roadside fire, regulating commerce in fireworks and teaching people not to operate power equipment in the weeds in red flag weather).

Given the truly enormous impacts that the VTP would have on the environment, and to remedy the DEIR’s faulty alternatives analysis, the Board must consider alternatives that actually lessen the VTP’s significant environmental impacts. Without this opportunity, the public is merely asked to take on "blind trust" that the proposed VTP is the best alternative. Asking for this sort of faith is not only unfair to the people of California, it is unlawful "in light of CEQA's fundamental goal that the public be fully informed as to the consequences of action by their public officials." *Laurel Heights, supra*, 47 Cal.3d 376, 494. Because the SMM Plan Alternative is reasonable and viable, and because it would achieve the VTP's objectives and lessen its environmental impacts, the Board must examine it in the revised DEIR.

E. The DEIR Must Be Revised and Recirculated.

Under California law, the present EIR cannot properly form the basis of a final EIR. CEQA and the CEQA Guidelines describe the circumstances which require recirculation of a draft EIR. Such circumstances include: (1) the addition of significant new information to the EIR after public notice is given of the availability of the DEIR but before certification[14], or (2) the draft EIR is so "fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded." CEQA Guidelines § 15088.5(a)(4).

Here, both circumstances apply. The Board and the public cannot possibly assess the VTP's impacts, or even its feasibility, through the present DEIR, which is riddled with errors. Among other fundamental deficiencies, the DEIR repeatedly understates the VTP's significant environmental impacts and assumes that unformulated or clearly useless mitigation measures will effectively reduce these impacts. In order to resolve these issues, the Board must prepare a revised EIR that would necessarily include substantial new information. Failure to recirculate the revised DEIR would thus violate CEQA.

III. Conclusion

For the reasons set forth above, we respectfully request that the Board revise its VTP in a manner that provides a far more specific process and set of governing criteria for determining how, where and whether a specific project should be implemented,

[14] Significant new information includes the identification of new significant impacts, a substantial increase in the severity of identified significant impacts, and the mitigation measures that could reduce impacts below a level of significance. *Id.*

based on up-to-date scientific research. We also request that no further consideration be given to the VTP until the Board has prepared an EIR for the revised Program that provides meaningful environmental analysis in full compliance with CEQA.

Very truly yours,

SHUTE, MIHALY & WEINBERGER LLP

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List of Exhibits:

Exhibit 1	Letter from Dan Silver, Executive Director, Endangered Habitats League to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013.
Exhibit 2	Letter from CJ Fotheringham, Research Ecologist, USGS to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013.
Exhibit 3	Letter from Wayne D. Spencer, Chief Scientist, Conservation Biology Institute to Board of Forestry and Fire Protection, February 25, 2013.
Exhibit 4	Letter from Alexandra D. Syphard, Research Scientist, Conservation Biology Institute to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013.
Exhibit 5	Letter from Karen A. Goebel, Assistant Field Supervisor, U.S. Department of the Interior, Fish and Wildlife Service to George Gentry, Executive Officer, California Department of Fire and Forest Protection, February 25, 2013.
Exhibit 6	Letter from Robert Taylor, Fire GIS Specialist, Department of the Interior, National Park Service, to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013.
Exhibit 7	Memorandum from Sandra Morey, Deputy Director, Ecosystem Conservation Division, California Department of Fish and Wildlife to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013.
Exhibit 8	Letter from Van K. Collinsworth, Natural Resource Geographer, to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 21, 2013.
Exhibit 9	Letter from Richard W. Halsey, Director, California Chaparral Institute to George Gentry, Executive Officer, Board of Forestry and Fire Protection, January 25, 2013.

Exhibit 10	Letter from Richard W. Halsey, Director, California Chaparral Institute and Justin Augustine, Attorney, Center for Biological Diversity to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013.
Exhibit 11	Letter from Richard W. Halsey, Director, California Chaparral Institute to George Gentry, Executive Officer, Board of Forestry and Fire Protection, April 8, 2013.
Exhibit 12	Letter from Anne S. Fege, Adjunct Professor, Department of Biology, San Diego State University to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 23, 2013.
Exhibit 13	Letter from Greg Suba, Conservation Program Director, California Native Plant Society to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 25, 2013.
Exhibit 14	Letter from Frank Landis, Conservation Chair, California Native Plant Society to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 15, 2013.
Exhibit 15	Letter from Sweetgrass Environmental Consulting to George Gentry, Executive Officer, Board of Forestry and Fire Protection, February 24, 2013.
Exhibit 16	Panel Review Report of Vegetation Treatment Program Environmental Impact Report Draft, California Board of Forestry and Fire Protection in Association with CAL FIRE Agency, August 2014.
Exhibit 17	Letter from Dan Silver, Executive Director, Endangered Habitats League to Duane Shintaku, Deputy Director, California Department of Forestry and Fire Protection, October 2, 2014.
Exhibit 18	Board of Forestry and Fire Protection and CAL FIRE News Release "Working to Increase Pace and Scale of Wildfire Prevention Activities," December 19, 2017.

Exhibit 19	"The impact of antecedent fire area on burned area in southern California coastal ecosystems," Journal of Environmental Management, O. Price et. al., April 18, 2012.
Exhibit 20	Fire Management Plan, Santa Monica Mountains National Recreation Area, June 7, 2016.

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January 10, 2018

To: California Board of Forestry and Fire Protection (BOF):

Subject: Comments on Recirculated Draft Vegetation Treatment Program (VTP) Programmatic Environmental Impact Report (PEIR)

We are ecologists with the Conservation Biology Institute (CBI), a nonprofit research and planning institution that performs applied research in biological conservation and resource management. Dr. Wayne Spencer is Chief Scientist at CBI, with decades of experience in natural resource management and conservation planning in California and the west, including research in fire ecology and management. Dr. Alexandra Syphard is a Senior Research Ecologist who has dedicated nearly 20 years to researching the impacts of fires and fire management actions on both human and wildland values.

We both have commented extensively on previous drafts of the VTPEIR with emphasis on the lack of scientific justification for proposed actions. Unfortunately, most of our concerns remain in the current document, which still inadequately describes the VTP; analyzes its impacts; outlines clear, enforceable, and effective mitigation measures; develops, presents, or fully analyzes an appropriate range of alternatives; or justifies the purpose and need for the PEIR with meaningful scientific support.

Some of our specific concerns:

<u>Misleading Goals and Assumptions.</u> Actions outlined in the PEIR are largely inconsistent with its stated goals (reducing risks to human life, property, and natural resources). Instead, the actions seem more intended for, and would be consistent with, a goal to achieve vegetation treatment acreage, *whether or not the treatments were actually needed or effective*. If the goal is actually to treat more acres with fewer regulatory burdens, then there is little incentive to consider more effective, less costly, or more environmentally friendly alternatives.

There is no scientific support demonstrating that treating more area for the sake of meeting quotas could attain the stated goals of the PEIR, except perhaps in some dry, mixed-conifer forests where fire suppression has greatly altered vegetation composition and structure. However, even in those limited dry-forest regions, treatments must be strategically placed and timed, primarily to create "anchor points" for firefighting activities and to accommodate a return of these fire-suppressed forests to a more natural, frequent-fire regime (Stevens et al. 2016). This requires extensive mapping and spatio-temporal analyses to identify effective and comprehensive strategies. Studies show that, without strategic planning, a low percentage of treatments intersect with wildfires, regardless of the area of treatment, and thus, they result in inefficient and potentially negatively harmful ecological impacts without any benefit (Syphard et al. 2012, Rhodes and Baker 2008, Naughton and Barnett 2017). On the other hand, treating smaller areas that are placed and timed strategically can increase the likelihood that a fire would intersect a fuel break, and potentially function as intended (Fry et al. 2015).

In California's nonforest shrublands, not only is there no scientific support for acreage quotas, there is little or no scientific support that *any* vegetation treatments increase resource benefits or decrease risks to resource values. While strategic placement and timing of fuel treatments near communities can allow safe firefighter access to protect human assets (Syphard et al. 2011a, 2011b, 2012), even these treatments should be viewed as a resource sacrifice for human protection, and not a resource benefit, because they often result in permanent elimination of native woody vegetation in favor of invasive grasses and other weeds (Merriam et al. 2006, Brennan and Keeley 2015).

Also misleading is the fact that the VTPEIR consistently suggests that vegetation treatments are effective at fire *prevention*; however, fire prevention implies eliminating *ignitions*, especially during severe fire weather. In California, fire ignitions are almost entirely human-caused; more likely close to human infrastructure than in wildlands; and more likely during severe wire weather than are lightening fires (Syphard et al. 2007, 2008, Syphard and Keeley 2015; Balch et al. 2017; Keeley and Syphard in preparation). It is unclear how fuel treatments proposed under the VTPEIR could possibly reduce ignition potential or change fire weather. In fact; treatments that convert woody or shrubby vegetation into more flammable vegetation types, such as annual grasslands, may actually *increase* ignition potential (Syphard and Keeley 2015). A comprehensive fire management approach needs to include proven ignition prevention measures (e.g., Prestemon et al. 2010).

<u>Insufficient Project Description</u>. The project description is still so vague that the environmental impacts cannot be meaningfully analyzed. The PEIR provides broad categories of vegetation treatments and WUI-based land zones where they may apply, but fails to explicitly explain how these would actually be used in the project planning process. For example, the PEIR implies that the number and type of vegetation treatments would be selected based on a number of

parameters—such as “the potential for significant adverse impacts”—but it never specifies how the various parameters, criteria, and principles would actually be applied to project planning nor does it specifically define “adverse impacts.” It also fails to define some key terms, such as “forest health,” which appear to be used as loopholes in the already vague principles. Impact findings based on such a loosely described project are necessarily simplistic speculations that allow substantial leeway in the design, and subsequently in the actual impacts, that may occur. Consequently, the PEIR defers the analysis of impacts and mitigation to be determined project-by-project in the future.

The 1.5-mile WUI definition is not supported by any scientific evidence or rationale, but rather by citing the 2004 US Forest Service Sierra Nevada Forest Plan Amendment, which is a federal planning document that used 1.5-miles as an arbitrary distance to roughly assess the number of homes and communities that might be affected by that plan. Something as key to establishing the area within which treatments are planned to meet the VTP’s stated goals (protecting human and natural resources) should be based on sound, objective analysis, not arbitrary analytical thresholds established by another agency for another purpose.

Furthermore, the 1.5-mile WUI definition vastly exceeds what the scientific evidence demonstrates as being potentially effective. As commented on previously by fire ecologists, and supported by recent peer-reviewed science, creating and maintaining fuel breaks not immediately adjacent to homes is not an efficient expenditure of funds (Naughton, and Barnett 2017), provides little if any protection to homes or other “high value assets” (especially under severe fire weather when most losses occur) and should be assessed as a resource sacrifice rather than a resource benefit (Cohen 2000; Keeley et al. 2009; Cary et al. 2009, Syphard et al. 2011, 2012, 2014; Calkin et al. 2013; Penman et al. 2014; Price et al. 2015).

<u>Failure to Adequately Reflect Peer Comments</u>. The PEIR seems to use the CFSC peer review to provide a veneer of scientific respectability, but fails to actually implement the peer comments in meaningful ways. For example, the peer review recommended that the PEIR should “provide an inventory and evaluation of the fuel breaks within the state that includes the development costs associated with continuing to develop and maintain a system… Across all of the Alternatives within the VTPEIR, different levels of investment (capital and maintenance) in fuels breaks should be clearly detailed (Agee et al. 2000).” We have been unable to find such an evaluation in the PEIR.

The review also strongly recommended using a formal adaptive management approach to improve understanding of VTP effects and effectiveness, and use of an outside party to monitor projects to “remove the ability of managers to rely on self-rating checklists that may not always show sound evaluation.” The current draft still defers development of a formal adaptive management plan to some future date.

Little Evidence the Proposed Treatments Will Be Effective. The PEIR still provides no evidence, references, or research studies demonstrating the effectiveness of the proposed treatments in protecting homes or other resources. Anecdotal case studies do not represent substantial, objective analyses. Cherry-picking case studies, such as cases when a fuel break may have helped stop a wildfire, can be highly misleading, particularly in the face of peer-reviewed studies showing low probabilities of this occurring over a large sample of fires (Syphard et al. 2011, 2012). Building construction materials and housing arrangements account more for structure losses during wildfires than do nearby vegetation characteristics (Syphard et al. 2012, 2017; Alexandre et al. 2016).

Inadequate Range of Alternatives. An EIR must analyze a range of reasonable alternatives that could feasibly attain the project objectives. However, other than the No Project Alternative, all alternatives in the PEIR are just variations on the theme of treating vegetation on wildlands to reduce fire risks to human or natural resources, despite all the science calling this approach into question. None of the alternatives is likely to achieve the stated objectives; and there are alternatives that are not only more environmentally friendly, but would be much more effective. Reasonable alternatives that would meet the VTP's stated objectives would need to take a comprehensive approach to fire management that includes community and regional planning (e.g., Syphard et al. 2012, 2013, 2016, Alexandre et al. 2016 a,b), reducing ignitability of structures (Syphard et al. 2017), properly implemented defensible space within 100 feet of structures (Syphard et al. 2015, Cohen et al. 2000), and ignition prevention planning (Prestemon et al. 2010, Syphard and Keeley 2016).

Vague Criteria and Guidelines. The VTP puts a lot of weight on use of various criteria, principles, and guidelines to avoid and mitigate impacts, but does not spell these out with sufficient detail for one to evaluate their effectiveness. For example, the principles for locating and implementing fuel break treatments are too vague, and no process is defined for how conflicts between project objectives would be resolved.

Continued Failure to Adequately Analyze Impacts. There is no defensible analysis of VTP impacts for any alternative, nor any meaningful comparison among alternatives. The impact findings are unsubstantiated opinions lacking factual support. In part this stems from the overly vague project description and unclear significance criteria, which provide no measurable thresholds of significance.

Conclusions

The VTPEIR remains fundamentally flawed and should be revised with a more scientifically valid and comprehensive approach to reducing risks to human and natural resources. We again recommend that the program be rethought from the ground up in collaboration with scientists, stakeholders, and other appropriate experts to develop a strategy that might actually achieve the goals of reducing risks to human and natural resources.

Sincerely,

Dr. Wayne D. Spencer
Chief Scientist, Conservation Biology Institute

Dr. Alexandra Syphard
Senior Research Ecologist, Conservation Biology Institute

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February 28, 2019

Board of Forestry and Fire Protection
ATTN: Edith Hannigan, Land Use Planning Program Manager
Re: Notice of Preparation of PEIR – CalVTP Comments
PO Box 944246
Sacramento, CA 94244-2460

Dear Ms. Hannigan:

The undersigned agricultural organizations thank you for the opportunity to provide scoping comments for the Program EIR related to the California Vegetation Treatment Program (CalVTP). The California Farm Bureau Federation (CFBF), California Cattlemen's Association (CCA) and the California Wool Growers Association (CWGA) strive to protect and improve the ability of farmers and ranchers engaged in production agriculture to provide safe, reliable, and healthful food and farm products through responsible stewardship of California's diverse natural resources. As California's forests are comprised of both public and private ownership, our organizations have been actively engaged in addressing the state's tree mortality challenges, as well as improving forest health and resiliency and reducing the risk of catastrophic wildfire.

The CalVTP is a long-overdue and much needed statewide strategy that will help private landowners and local communities undertake fuel reduction projects without the need for duplicative, costly and time-consuming environmental reviews. Conditions in California's wildlands are changing at a rapid pace. While it can be argued that a combination of natural and manmade factors has contributed to the current conditions in California's wildlands, the state's current practices and policies related to wildland management are inadequate to accommodate the environmental changes that are said to be occurring. If climate change is exacerbating the current conditions of California's forests and wildlands, then a robust program of management actions that increase the pace and scale of fuels and forest management is critical not only to ensure that California's wildlands remain resilient but also lower the risk of potential wildfire.

It is crucially important that the Board of Forestry and Fire Protection (Board) move expeditiously in the development of the CalVTP, and we have the following comments regarding the development of a new Draft Programmatic EIR:

Grazing

Grazing (or prescribed herbivory) must be included in the CalVTP as a viable wildland management solution for reducing fire fuels. The use of livestock reduces the severity of fires, promotes healthy forests by grazing the vegetation that crowds out and competes with trees, improves wildlife habitat and can be utilized in areas that are too steep for machinery, or too close in proximity to residential areas that may have concerns with chemical treatments of the landscape. Studies have shown that the removal of vegetative biomass as a result of grazing reduced flame lengths and would reduce the cost of fighting a potential wildfire.[1] On an annual basis, grazing can reduce the amount of herbaceous fire fuels, including cheatgrass, forbs and small twigs of woody plants. Grazing reduces fire spread and intensity by removing understory vegetation, reducing the amount of fuel and accelerating the decay of litter through trampling. The effects of grazing result in fires that burn at lower intensity, increased patchiness, decreased rate of spread.[2] Grazing before a fire can create patchy burns that result in unburned islands of vegetation, providing seed sources for re-establishment of plants after the burn and an increased survival rate of plants after a fire.

In addition, grazing activities can yield many positive environmental benefits. Grazing impacts can include promotion of native plant biodiversity, increased prospects for carbon sequestration, increased nutrients, invasive species control, enhancement of wildlife and serves an important role in landscape restoration following a fire. Research conducted in the San Francisco Bay area have concluded that populations of the Bay Checkerspot Butterfly had been extirpated due to the loss host plants following the removal of livestock.[3] Grazing is a natural, environmentally friendly and cost-effective tool for reducing fire risk. Grazing is one of many tools that the state can use to mitigate wildfire risk and is an active land management strategy that California communities continue to utilize.

Expanded Opportunities for Grazing on State Lands

State lands typically, but not exclusively, owned and managed by the Department of Fish and Wildlife and the California Department of Parks and Recreation contain significant fuel loads that require management on an annual basis. Most of these state owned lands were actively grazed in the past; however, today thousands of acres sit idle with no active management to reduce fuel loads. As such, wildlife habitat has deteriorated, invasive species and brush have proliferated the native environment and fuel loads have increased exponentially.

Agencies have suggested CEQA may serve as a hurdle to the reintroduction of grazing on state owned lands. We urge the Board to explore the inclusion of grazing on state owned lands as a covered activity under the CalVTP. We fully recognize that any program will require a comprehensive planning effort to determine financing mechanisms to repair and reconstruct rangeland infrastructure that has long been neglected in order to facilitate grazing. In addition, we recognize that any effort will require a financial commitment on the part of ranchers and a significant in-kind contribution in time and labor. We are committed to working as partners with the Board and other state agencies to accomplish this work that will not only benefit the landscape but will also generate revenue for the state.

Water Supply and Quality

The CalVTP should analyze the related improvements to both water yield and quality associated with vegetation and forest management activities. Restoration and management activities can optimize available water supplies not only for consumptive uses related to agriculture and urban demands, but also for ecological restoration goals, and have the added benefit of protecting water quality and reducing risk to "brick and mortar" infrastructure for hydropower and water supplies. Research has found that

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[1] Retta A. Bruegger, Leticia A. Varelas, Larry D. Howery, L. Allen Torell, Mitchell B. Stephenson, Derek W. Bailey. *Targeted Grazing in Southern Arizona: Using Cattle to Reduce Fine Fuel Loads.* Rangeland Ecology & Management, 69(1):43-51.

[2] EK Strand, KL Launchbaugh, RF Limb, LA Torell. 2014. Livestock grazing effects on fuel loads for wildland fire in sagebrush dominated ecosystems. Journal of Rangeland Applications 1, 35-57.

[3] Weiss, S.B., Wright, D. H., and C. Niederer. 2007. Serpentine vegetation management project 2007 final report. Creekside Center for Earth Observation.

appropriate thinning of trees and vegetation management can reduce water stress in overly dense forests and increase water yields. By simply reducing the water used by plants in watersheds, more rainfall and snow accumulations are allowed to flow into rivers and recharge groundwater aquifers. Researchers found that over an almost 20-year period, fire-thinned forests saved 3.7 billion gallons of water annually in California's Kings River Basin and 17 billion gallons of water annually in the American River Basin.[4]

As it relates to water quality, wildfires can contaminate watersheds via enhanced erosion, elevated levels of nutrients and the mobilization of other organic matter. These influences jeopardize the operation of municipal water treatment facilities by interfering with chemical treatment and limiting the effectiveness of filtration. [5] Further, increased sedimentation loads will also impact water supply by reducing reservoir storage, increase the need and cost of reservoir maintenance, and damage wildlife habitat, as was the case for 2014 King Fire and the post fire impacts to the Rubicon River Watershed and Oxbow Reservoir operated by the Placer County Water Agency.

Impacts Related to Climate Change

The CalVTP should include an examination on the potential positive impacts the program will have on future greenhouse gas (GHG) emissions. For millennia, California's forests acted as a natural carbon sink as they regulated greenhouse gases from the atmosphere and stored the carbon in the soil or in the trees themselves. Unfortunately, wildfires will continue to emit carbon dioxide and other GHGs for years after a fire and emissions from decomposing woody biomass will often surpass the direct emissions from a fire itself. Research has demonstrated that between 2001 and 2010, California's forests emitted more carbon than they sequestered, and the current conditions of California's forests have since worsened.[6] In addition, some of California's more recent wildfires have burned at such a high severity that it will take several decades to restore a similar level of sequestration and carbon storage potential. The 2013 Rim Fire burned more than 250,000 acres and incinerated almost 100,000 acres into a moonscape that will likely not host any carbon sequestering vegetation for the next thirty to fifty years. According to data analyzed by the U.S. Geological Survey, 68 million tons of carbon dioxide were released during the 2018 California wildfire season.[7]

We believe that the management activities provided for in the CalVTP will generate a net decrease in emissions. While some treatments may themselves emit GHGs from combustion of fossil fuels, these activities will remove woody biomass that otherwise would continue to emit GHGs and also mitigate the possibility of larger, more severe wildfires that generate millions of tons of GHG emissions.

Climate scientists and fire ecologists have claimed that California will experience more frequent and extreme wildfires, and climate change can influence the likelihood of these events. As the fire and climate change risks have increased, California has failed to keep pace with the necessary investments and regulatory flexibilities needed to manage the state's wildland landscapes. California's wildfires will continue to damage property, disrupt ecosystems, destroy commercially valuable timber, may result in

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[4] James W. Roche, Michael L. Goulden, Roger C. Bales. *Estimating evapotranspiration change due to forest treatment and fire at the basin scale in the Sierra Nevada, California.* Ecohydrology, 11 (7) – October 2018.
[5] Fernando L. Rosario-Ortiz, Amanda Hohner, Jackson Webster, Kaelin Cawley. *Wildfire Impacts on Drinking Water Treatment Process Performance: Development of Evaluation Protocols and Management Practices.* Water Research Foundation, 2018.
[6] Patrick Gonzalez, John J. Battles, Brandon M. Collins, Timothy Robards, David S. Saah. *Aboveground live carbon stock changes of California wildland ecosystems, 2001–2010.* Forest Ecology and Management, V. 348, July 2015, 68-77.
[7] New Analysis Shows 2018 California Wildfires Emitted as Much Carbon Dioxide as an Entire Year's Worth of Electricity. US. Department of Interior Press Release, November 30, 2018. https://www.doi.gov/pressreleases/new-analysis-shows-2018-california-wildfires-emitted-much-carbon-dioxide-entire-years.

the further loss life, and impair the state's air and water quality. We are committed to working with the Board and CAL FIRE in the development of a statewide VTP and look forward to the eventual implementation of this critical management tool.

Please provide the California Farm Bureau Federation, the California Cattlemen's Association and the California Wool Growers Association with a copy of any subsequent environmental documentation when it becomes available for public review. Any future correspondence relating to CalVTP shall be sent to:

Robert Spiegel
Government Affairs Advocate – Forestry and Natural Resources
California Farm Bureau Federation
1127 11th Street, Suite 626
Sacramento, CA 95814

Robert Spiegel can be contacted at (916) 446-4647 or rspiegel@cfbf.com.

Justin Oldfield
Vice President, Government Affairs
California Cattlemen's Association
1221 H Street
Sacramento, CA 95814

Justin Oldfield can be contacted at (916) 444-0845 or justin@calcattlemen.org.

Erica Sanko
Executive Director
California Wool Growers Association
25 Cadillac Drive, Suite 214
Sacramento, CA 95825

Erica Sanko can be contacted at (916) 444-8122 or erica@woolgrowers.org.

Sincerely,

Robert J. Spiegel
Government Affairs Advocate – Forestry and Natural Resources
California Farm Bureau Federation

Justin Oldfield
Vice President, Government Affairs
California Cattlemen's Association

Erica Sanko
Executive Director
California Wool Growers Association

Anne S. Fege, Ph.D., M.B.A.
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February 28, 2019

Dr. J. Keith Gilless, Chair
Mr. Matthew Dias, Executive Officer
Ms. Edith Hannigan, Land Use Planning Program Manager
California Board of Forestry and Fire Protection
P. O. Box 944246
Sacramento, CA 94244-2460 vegetationtreatment@bof.ca.gov

SUBJECT: **Notice of Preparation of a Program Environmental Impact Report for the California Vegetation Treatment Program**

Dear Dr. Gilless, Mr. Dias, Ms. Hannigan, and Board of Forestry Members:

Thank you for the opportunity to provide comments on the Notice of Preparation for the Programmatic Environmental Impact Report (PEIR) for the Vegetation Treatment Program (VTP). Vegetation reduction near homes and communities is indeed an essential and effective fire management tool, but only as part of a broader approach to reduction of structure ignitability, location of structures and communities, and suppression preparedness.

The Notice of Preparation starts with the phrase, “to counteract decades of fire suppression,” yet that is not the predominant reason for the increasing severity of wildfires and loss of property and life. Most of the unprecedented losses occurred from structure ignitions from embers and other structures, and evacuation from communities built in high-risk locations. The rest of the phrase is a reasonable overall goal, “to reduce fire fuels, improve protection from wildfire through strategically located fuel breaks, and mimic a natural fire regime using prescribed burning.”

Treatments and objectives

The 2017 VTP included five objectives (section 2.2.1). The first three objectives were focused on reducing wildfire losses but disregarded the preparedness of communities to withstand the wind- and fuel-driven wildfires that many areas have experienced in the past decade in California. Greater focus needs to be placed on structural hardiness for reducing flammability, improved alerts and evacuation procedures, enhanced and detailed plans for suppression strategies for each community, and fuel reduction that will facilitate suppression actions. These proposed actions need to be fully developed in this VTP and then implemented through CalFire staffing, resources, and financial support to communities.

When the VTP is developed, the first three objectives should to be modified to:

1. Modify ~~wildland fire behavior~~ ***structural hardiness, evacuation planning, and ignition sources*** to help reduce losses to life, Property and natural resources.

> 2. Increase the ~~opportunities for~~ ***effectiveness of suppression strategies by establishing and maintaining fuel modification around and in communities to alter or influence*** ~~altering or influencing~~ the size, intensity, shape, and direction of wildfires within the wildland urban interface.
>
> 3. Reduce the potential size and total associated suppression costs of individual
>
> wildland fires by altering the ***flammability of structures, community-based pre-suppression actions, and fuel modification to increase effectiveness of planned suppression strategies.*** ~~, continuity of wildland fuels.~~

The last two objectives are reasonable proposed actions for managing healthy forests:

> 4. Reduce the potential for high severity fires by restoring and maintaining a range of native, fire-adapted plant communities through periodic low intensity treatments within the appropriate vegetation types.
>
> 5. Provide a consistent, accountable, and transparent process for vegetation treatment monitoring that is responsive to the objectives, priorities and concerns of landowners, local, state, and federal governments, and other stakeholders.

Fuel break effectiveness

The VTP needs to focus on the effectiveness of vegetation strategies and projects. Fuel breaks located in the wildland-urban interface are highly likely to have firefighters and fire suppression activities, at the time of a wildfire, and thus far more likely to be effective at stopping wildfire spread than those located distant from structures and communities. Fuel treatments can effectively create strategic control points to allow firefighters to control wildfire in the initial attack phase and when the fire approaches residential structures and other assets at risk. Fuel reduction can also create safe ingress and egress routes along existing roads and driveways.

The defensible space around communities is generally accepted to be about 300 feet, and that is primarily to create fuel breaks for structure protection, not to eliminate embers. The periodic re-treatment, due to regrowth of vegetation, needs to be addressed in the projection of acres treated.

Structure ignitions

Scientific research and decades of experience of wildland firefighters have shown that the most effective way to prevent the loss of life and property from wildland fires is to work from the house out, to reduce home flammability with non-flammable materials and features, ember-resistant vents, removal of debris from roofs and adjacent to the structure, and more. And then to properly maintain defensible space, within 100 feet of the structure. An even more effective alternative is to cease zoning and building homes and other structures in locations that have high wildfire risks.

The wildfire problem is a home ignition problem, not a wildfire control problem. Homes are arguably the most flammable elements in a forest, chaparral, or subdivision. Most structures ignite during wildfires from wind-driven embers that can blow a mile ahead of the flames. Houses ignite from other burning houses, often far from burning vegetation or trees.

Defensible space reduces the proximity of burning vegetation and landscape elements to houses, and ignition by radiation. Research has clearly indicated that defensible space distances beyond 100 feet can does not reduce structure ignitions, and excessive clearing results in establishment of flammable weeds and erosion.

Scientific evidence

Although the vegetation treatments were described in greater detail in the 2017 DPEIR than in earlier drafts, there was still limited and inadequate scientific basis for their effectiveness. There were inconsistencies, anecdotal statements, claims unsupported by scientific studies, misrepresentations of citated papers, contradictory statements, and undefined terms.

Project level analysis and review

The project level analysis needs to be available for public review, to ensure that each project is consistent with the final approved PEIR for vegetation treatment. The establishment and maintenance of fuel breaks need to build on, and be limited to, fuel breaks identified in the Unit Fire Plans and Community Wildfire Protection Plans. Project managers need to identify, reach out to, and work with stakeholders in their community, and keep them informed about project progress, modifications made to the project plan or implementation, completion of the project, and outcomes from the vegetation treatment. The public notification and opportunity for involvement needs to be realistic and robust. CalFire needs to maintain an online list of proposed, current, and completed projects in each unit, with the draft project plans and schedule of public meetings and comments.

Future conditions

With the impacts of human-caused climate change accumulating much faster than recent predictions, it is imperative that the PEIR consider the driving factors of drought and severe weather patterns. Vegetation conditions, response of vegetation to prescribed fire, and regrowth after mechanical or other treatments may be different than past experiences, in a future changed climate.

Closing

Thank you for this opportunity to comment on the PEIR for the Vegetation Treatment Program, which has important, but not sufficient, tools for reducing wildfire risks and losses.

Sincerely,

Anne S. Fege

Anne S. Fege, Ph.D., M.F.S. Forest Science
Retired Forest Supervisor, Cleveland National Forest
Adjunct Professor, Department of Biology, San Diego State University

Hannigan, Edith@BOF

From: Jerry Fisher <jfisher760@aol.com>
Sent: Friday, March 1, 2019 7:02 AM
To: Hannigan, Edith@BOF; CALVTP@BOF
Subject: NOP Comments CalVTP PEIR

Hi Edith,
It was a pleasure to meet you with both you and Heather Blair in Ontario.

Based upon personal fire fighting experience and ownership of a very unique property, in a very unique location, I hope to focus on and enjoy your support on **fire prevention** – especially in this area.

WHAT? Fire prevention by establishing a "NO IGNITION" system 5 days prior to Santa Ana winds arriving, and continuing until the winds leave.

HOW? Volunteer groups be stationed 24/7, supported by camera equipment, road closures (except to homeowners), public notice.

WHERE? The steep sloped valley, carrying the San Luis Rey River starting at it's dam location on Lake Henshaw, at the base of Palomar Mountain, East San Diego County.

WHY? (a) The 2003 and 2007 fires proving in this area during the annual Santa Ana wind conditions, accelerating (creating a tunnel effect) put at risk all 3,3300,000 inhabitants in the county, clear to the ocean. (b) Many property wildlife designations, including a portion of the western bird migration corridor, US Fish & Game PAMA property. (c) Number one water priority per 50-year litigation with 5 local tribes. (d) Scenic river and scenic highway designations. (e) National EPA recognition of water and CO_2 importance.

Edith, the dollar value alone for just the conservation aspects is not only extremely high (up to $30,000,000 on just my property alone), but virtually irreplaceable.

The mitigation to accomplish the above should not cost the taxpayers anything (i.e. volunteer labor, underground power line in the Highway 76 Row, which AT&T has already done, Scenic Highway designation was passed 50+ years ago).

The PR, especially at this time of the State's fire history could, without a doubt, be substantial! If it is not acted upon, there will be, for sure, stories.

Again, it was a pleasure to meet you and Heather. Please let me know if there is anything you need.

God Bless,

Jerry Fisher

Cc: Various Conservation Folks

Gerald W. Fisher
Mitchell Consulting Company (1929)
8357 Sunshine Lane
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Hannigan, Edith@BOF

From: Audrey Fusco <audrey.fusco@gmail.com>
Sent: Thursday, February 7, 2019 2:04 PM
To: CALVTP@BOF
Subject: Cal Fire Vegetation Plan

Re: California Vegetation Treatment Program

Dear Edith Hannigan, Land Use Planning Program Manager,

I recently learned of Cal Fire's plans to eliminate as much as 250,000 acres of vegetation annually through application of herbicides and controlled burns. I urge Cal Fire to look at more responsible and sustainable solutions to manage fire risk than options which involve application of pesticide and destruction of habitat. The application pesticide and removal of vegetation will harm people as well as wildlife.

Further, it seems that most fires have been caused by human activities such as mismanagement by PG&E of utility lines. While reducing fuel loads may help to slow down the spread of fire, removal of vegetation does not address the ultimate cause of the wildfires, which is mismanagement of land by people. Adding pesticide and removing vegetation will only contribute to mismanagement of land. A better land management plan would be to restore land with native vegetation and create healthy and resilient ecosystems. Please write to ekubey@cnps.org of the California Native Plant Society to learn more about how to balance fire regimes with native vegetation.

Regards,
Audrey Fusco

By Certified US Mail and email

February 25, 2019

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Land Use Planning Program Manager
Matt Dias, Executive Officer
Email: CalVTP@bof.ca.gov
Mail: PO Box 944246
Sacramento, CA 94244-2460

Dear Ms. Hannigan and Mr. Dias,

RE: Scope to include in the Program Environmental Impact Report for the California Vegetation Treatment Program CalVTP PEIR ("Project") - proposed "treatment" acreage target is 250,000 acres of non federal land per year.

1. HEALTH EFFECTS

It is proposed the Project will include extensive burning of wildland "fuels" with the use of, yet to be defined, "accelerants." The burning of fuels and accelerants will have an adverse effect on human health. The adverse effects must be reviewed by health professionals for potential negative health effects as related to the combustion of both the fuels and accelerants and their combined effects. Because there is documented evidence in State records of Cal Fire employees conducting burns under "no burn day" conditions the health professionals should investigate that aspect as well.

The American Heart Association states that more than 121 million adults had cardiovascular disease in 2016. Myocardial infarction spike in heart attacks and stroke occurred after wildfire smoke exposure. Smoke exposure will be certain from the extensive burning proposed under the Project.

A California study found a large increase in emergency department visits for cardiac events by exposure to smoke from wildfires was associated with a large increase in California emergency department (ED) visits for heart disease and stroke during the 2015 wildfire season after a review of more than 1 million ED visits in affected regions. A 42% increase in ED visits for heart attack and a 22% increase in visits for ischemic heart disease were found among individuals ages 65 and older as reported by Ana G. Rappold, PhD, of the Environmental Protection Agency (EPA) and colleagues. Wildfire smoke exposure is an established risk factor for respiratory illnesses such as chronic obstructive pulmonary disease (COPD) and asthma. The increase in hospital ED visits for stroke, heart attack and other cardiovascular causes was most pronounced in elderly people. The population-based epidemiologic analysis, published in the Journal of the American Heart Association, was a joint collaboration between researchers at the University of California, San Francisco, the California Department of Public Health and the EPA.

Researchers reviewed more than 1 million ED visits from May 1 to September 30, 2015, when wildfires in northern and central California burned some 800,000 acres.

Smoke contains air pollutants previously associated with respiratory and cardiovascular outcomes, including particulate matter, ozone, carbon monoxide, polycyclic aromatic compounds and nitrogen dioxide. This is compounded by the use of accelerants. "The message to the public -- particularly people with established heart, vascular or respiratory disease -- is that they are at higher risk when exposed to poor air quality because of wildfire smoke," said co-author Wayne Cascio, MD, director of the National Health and Environmental Effects Research Laboratory at the EPA. "They should consider taking action to lower their exposure." Cal Fire will be increasing exposure by starting fires and must consider alternatives.

Burns started by Cal Fire will also generate nanoparticles, the ideal size for deep lung penetration. Nanoparticles are not accounted for in the federal Air Quality Index and may be invisible, travel away from the plume of smoke created as a result of the Project and must be studied in depth as a part of this Project. Cal Fire will be increasing exposure to these very dangerous nanoparticles.

2. ACCELERANTS

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Independent from the proposed CalVTP, other entities will be independently conducting vegetation reduction, most by the use of fire. A partial list includes the U. S. Federal Government including the U.S. Forest and National Park Services, Pacific Gas and Electric Company, Southern California Edison, San Diego Gas & Electric, CalPeco, BVES, PacifiCorp, Midpeninsula Regional Open Space District, other open space districts, State of California, county and local park districts, private land owners, local communities, forest managers, individual counties, Fire Protection Districts, Fire Departments and more. The total combined impact must be documented and analyzed to include, but not be limited to, environmental impacts on wildlife, plant communities, water and air quality, visual and aesthetic resources, recreation, soils, and invasive weed spread.

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Regards,

Peter Gruchawka
POB 670
Kenwood, CA 95452
707-833-5027

By Certified US Mail and email

February 25, 2019

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Land Use Planning Program Manager
Matt Dias, Executive Officer
Email: CalVTP@bof.ca.gov
Mail: PO Box 944246
Sacramento, CA 94244-2460

Dear Ms. Hannigan and Mr. Dias,

RE: Scope to include in the Program Environmental Impact Report for the California Vegetation Treatment Program CalVTP PEIR ("Project") - proposed "treatment" acreage target is 250,000 acres of non federal land per year.

1. HEALTH EFFECTS

It is proposed the Project will include extensive burning of wildland "fuels" with the use of, yet to be defined, "accelerants." The burning of fuels and accelerants will have an adverse effect on human health. The adverse effects must be reviewed by health professionals for potential negative health effects as related to the combustion of both the fuels and accelerants and their combined effects. Because there is documented evidence in State records of Cal Fire employees conducting burns under "no burn day" conditions the health professionals should investigate that aspect as well.

The American Heart Association states that more than 121 million adults had cardiovascular disease in 2016. Myocardial infarction spike in heart attacks and stroke occurred after wildfire smoke exposure. Smoke exposure will be certain from the extensive burning proposed under the Project.

A California study found a large increase in emergency department visits for cardiac events by exposure to smoke from wildfires was associated with a large increase in California emergency department (ED) visits for heart disease and stroke during the 2015 wildfire season after a review of more than 1 million ED visits in affected regions. A 42% increase in ED visits for heart attack and a 22% increase in visits for ischemic heart disease were found among individuals ages 65 and older as reported by Ana G. Rappold, PhD, of the Environmental Protection Agency (EPA) and colleagues. Wildfire smoke exposure is an established risk factor for respiratory illnesses such as chronic obstructive pulmonary disease (COPD) and asthma. The increase in hospital ED visits for stroke, heart attack and other cardiovascular causes was most pronounced in elderly people. The population-based epidemiologic analysis, published in the Journal of the American Heart Association, was a joint collaboration between researchers at the University of California, San Francisco, the California Department of Public Health and the EPA.

Researchers reviewed more than 1 million ED visits from May 1 to September 30, 2015, when wildfires in northern and central California burned some 800,000 acres.

Smoke contains air pollutants previously associated with respiratory and cardiovascular outcomes, including particulate matter, ozone, carbon monoxide, polycyclic aromatic compounds and nitrogen dioxide. This is compounded by the use of accelerants. "The message to the public -- particularly people with established heart, vascular or respiratory disease -- is that they are at higher risk when exposed to poor air quality because of wildfire smoke," said co-author Wayne Cascio, MD, director of the National Health and Environmental Effects Research Laboratory at the EPA. "They should consider taking action to lower their exposure." Cal Fire will be increasing exposure by starting fires and must consider alternatives.

Burns started by Cal Fire will also generate nanoparticles, the ideal size for deep lung penetration. Nanoparticles are not accounted for in the federal Air Quality Index and may be invisible, travel away from the plume of smoke created as a result of the Project and must be studied in depth as a part of this Project. Cal Fire will be increasing exposure to these very dangerous nanoparticles.

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Peter Gruchawka
POB 670
Kenwood, CA 95452
707-833-5027

Hannigan, Edith@BOF

From: Susan Krzywicki <susankrzywicki@mac.com>
Sent: Tuesday, February 26, 2019 5:20 PM
To: CALVTP@BOF
Subject: Attn: Edith Hannigan, Land Use Planning Program Manager

I am a native plant supporter and am writing to you about my objections to the Proposed Vegetation Treatment Program - which requires comments by March 1.

I've been reading up on this issue and say that I must agree with the major talking points that the California Chaparral Institute has been teaching me about:

The Same Errors Over and Over Again

In the 2016 draft (almost identical to the 2017 version)
- Potential impacts are dismissed without support
- Mitigations of impacts are unenforceable and unmeasurable
- Clearance of northern chaparral is justified by logical fallacies
- Research of several scientists continues to be misrepresented (despite corrections being submitted)
- Lack of transparency remains a significant issue

One of the most egregious examples of the DPEIR's failure is the continued use of outdated and inadequate spatial data that provides the foundation for the entire Program. Although updated data is available from Cal Fire itself, **the DPEIR ignores this rich resource** and depends instead on questionable information from decades ago.

As a consequence, the current EIR fails to meet the requirements of the California Environmental Quality Act (CEQA).

Please do look at better spatial data, and please do consider that these wildfires are not the result of the plants, but of the humans. And solutions should be based on the restraints of humans, not the destruction of the very species that belong here - and need to be here in order to keep any semblance of a healthy ecosystem.

Regards,

Susan Krzywicki
susankrzywicki@mac.com
www.susankrzywicki.com
(619) 318-4590
California Native Plant Society, Ocean Friendly Gardens

Hannigan, Edith@BOF

From: Betsey Landis <betseylandis@sprintmail.com>
Sent: Friday, March 1, 2019 11:03 PM
To: CALVTP@BOF
Cc: Snowdy Dodson; Julie Clark De Blasio
Subject: Notice of Preparation of a PEIR for the CaVTP

TO: Edith Hannigan, Land Use Planning Program Manager
California Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244

FROM: Betsey Landis, Conservation Committee, Los Angeles/Santa Monica Mountains Chapter
California Native Plant Society

RE: Notice of Preparation of a Program Environmental Impact Report (PEIR) for the California
Vegetation Treatment Program (VTP)

Dear Ms. Hannigan:

The California Native Plant Society Conservation Program Director, Greg Suba,has sent you comprehensive comments on this latest PEIR of the VTP.

We agree with his comments and recommendations.

However, I have more comments based on one of the proposed vegetation treatments: prescribed burning.

1. Here in the 21st century, when the climate is changing and the weather is wildly chaotic, there is no way to "prescribe" or reliably schedule burning of any exact acreage ahead of time. Here in southern California you have to have a permit from South Coast Air Quality Management Board to burn a specific acreage at an exact time. Their staff told me this permit takes weeks to be approved. In that time no one can reliably predict the wind speed and weather at the approved time of the prescribed burn. Prescribed burns are no longer a safe or reliable treatment of forests and especially not in shrublands of southern California where biodiversity and ecosystem health have been threatened by too-frequent burning,fuel modification and poorly planned residential and institutional development.

2. CalRECYCLE (California Solid Waste Management Board) is working with the State Legislature to establish laws governing the disposal of "organic" waste and to compost or otherwise keep those wastes out of landfills. This means after a prescribed burn all debris has to be taken to a composting or other business for processing. If the waste is infected or infested, it has to go to a processing center permitted by California Food and Agriculture to receive it.

In Los Angeles County, the Los Angeles County Integrated Waste Management Task Force has a subcommittee called the "Alternative Technology Subcommittee" that has studied various technologies from around our country and the world to find out which systems will most efficiently process organic waste, especially food and green waste, and produce useful end-products. The usual end-products are ethanol or electricity. These are both useful in an era where power companies are supposed to be moving away from using oil and coal. Some of these technologies are in compact tank structures that can be moved from site to site e.g.to process green waste from forest thinning projects. This can be a positive result of thinning forest trees near small towns supplied by small power companies.

3. Therefore, remove "prescribed burns" from the proposed VTP. It is more dangerous than useful as a vegetation management tool.

This is especially true in our southern California chaparral and shrublands.

4. As expressed in Greg Suba's comments, no treatment program should be planned in natural areas without a thorough knowledge of the native plants being treated and how best to nurture the growth of young native trees, shrubs, annual and perennial plants, and all the living organisms that create one of the world's most famous centers of biodiversity.

Betsey Landis
Conservation Committee
Los Angeles/Santa Monica Mountains Chapter California Native Plant Society

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Office of the General Manager

February 27, 2019

Edith Hannigan
Land Use Planning Program Manager
California Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, California 94244-2460

Dear Ms Hannigan:

Review of the Notice of Preparation for the
California Board of Forestry and Fire Protection's California Vegetation Treatment Program

The Metropolitan Water District of Southern California (Metropolitan) has reviewed the Notice of Preparation for the California Vegetation Treatment Program (CalVTP). The proposed program consists of the implementation of vegetation treatments to reduce wildfire risks and avoid or diminish the harmful effects of wildfire on people, property, and natural resources in the State of California. The CalVTP includes three general types of treatments including Wildland-Urban Interface fuel reduction, fuel breaks, and ecological restoration projects. Within these three general treatment types, treatment activities may include prescribed fire, manual activities, mechanical activities, prescribed herbivory, and application of herbicides. The program covers approximately 20.3 million acres of State Responsibility Area suitable for vegetation treatments under the CalVTP. The California Board of Forestry and Fire Protection is the CEQA Lead Agency. This letter contains Metropolitan's comments to the potentially affected public agency.

Metropolitan is a public agency and regional water wholesaler. It is comprised of 26 member public agencies, serving approximately 19 million people in portions of six counties in Southern California. Metropolitan's mission is to provide its 5,200 square mile service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way. Metropolitan owns and operates 775 miles of water pipelines and canals, 17 dams, and 16 hydroelectric power plants within its service area.

Additionally, Metropolitan has established open spaces and manages or partners with other organizations to preserve and support native species and habitat. Five large-scale multi-species reserves are the basis for Metropolitan's environmental conservation and stewardship, and include the Southwestern Riverside County Multi-species Reserve, Upper Salt Creek Wetland Preserve, Santa Rosa Plateau Ecological Reserve, Lake Mathews Multiple Species Reserve, and the Natural Communities Coalition in Orange County. Fire and vegetation management activities are an integral part of planning and management for all of the Metropolitan associated reserves, and Metropolitan requests to be continually involved in the California Vegetation Treatment Program as it may affect reserve management. Information pertaining to Metropolitan's reserves and open space management can be found at http://www.mwdh2o.com/PDF_NewsRoom/Environmental_Stewardship.pdf .

Detailed prints of drawings of Metropolitan's pipelines and rights-of-way may be obtained by calling Metropolitan's Substructures Information Line at (213) 217-7663. To assist the applicant in preparing plans that are compatible with Metropolitan's facilities and easements, we have a link to the "Guidelines for Improvements and Construction Projects Proposed in the Area of Metropolitan's Facilities and Rights-of-Way" at
http://www.mwdh2o.com/PDF_Doing_Your_Business/4.7.1_Guidelines_development.pdf
Please note that all submitted designs or plans must clearly identify Metropolitan's facilities and rights-of-way.

We appreciate the opportunity to provide input to your planning process and we look forward to receiving future documentation and plans for this program. For further assistance, please contact Ms. Michelle Morrison at (213) 217-7906.

Very truly yours,

Sean Carlson
Interim Team Manager, Environmental Planning

MM
Share Point\California Vegetation Treatment Program

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691 Phone (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov
Twitter: @CA_NAHC

RECEIVED BY
FEB 14 2019
BOARD OF FORESTRY AND FIRE PROTECTION

February 12, 2019

Edith Hannigan
Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 95650

RE: SCH# 2019012052 California Vegetation Treatment Program (CalVTP), Statewide

Dear Ms. Hannigan:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of <u>portions</u> of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
   a. A brief description of the project.
   b. The lead agency contact information.
   c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
   d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).
   a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
   a. Alternatives to the project.
   b. Recommended mitigation measures.
   c. Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.
   d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
   a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
   b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
   a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
   b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
       i. Planning and construction to avoid the resources and protect the cultural and natural context.
       ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
       i. Protecting the cultural character and integrity of the resource.
       ii. Protecting the traditional use of the resource.
       iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code §21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
   a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
   b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
   a. If part or all of the APE has been previously surveyed for cultural resources.
   b. If any known cultural resources have already been recorded on or adjacent to the APE.
   c. If the probability is low, moderate, or high that cultural resources are located in the APE.
   d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
   a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
   b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address:

Gayle.Totton@nahc.ca.gov.

Sincerely,

Nancy Gonzalez

for

Gayle Totton
Associate Governmental Program Analyst

cc: State Clearinghouse

Northcoast Environmental Center
PO Box 4259
Arcata, CA 95518

S.A.F.E
PO Box 1510
Hayfork, CA 96041

February 28, 2019

Board of Forestry and Fire Protection
P.O. Box 944246
SACRAMENTO, CA 94244

Dear Board of Forestry and Fire Protection,

Thank you for the opportunity to comment on the California Vegetation Treatment Environmental Impact Report that you are preparing.

We recognize the importance of fuels reduction, particularly in the wildland urban interface (WUI). We strongly support the creation of roadside shaded fuel breaks along the extensive road network through the public lands. We support the treatment activities that you have outlined and are pleased to see you upscaling the size of the project you are proposing. We support all types of fuels reduction you're proposing including prescribed fire, manual and mechanical clearing activities, beneficial grazing and/or browsing, but we <u>do not</u> agree with the use of chemical herbicides for the purposes of fuels reduction.

We believe that creating a stable workforce of trained workers for creating and maintaining roadside shaded fuel breaks and other type fuel breaks is the best long term solution. In Humboldt and Trinity Counties public sentiment is strongly opposed to spraying chemicals along the roadsides.

Thank you again for this opportunity to comment.

Larry Glass

Executive Director of Northcoast Environmental Center and Executive Director of Safe Alternatives for Forest Environment

RANCHO SIMI
RECREATION AND PARK DISTRICT
California

RANCHO SIMI
RECREATION & PARK DISTRICT

4201 Guardian Street
Simi Valley, CA 93063
805-584-4400
www.rsrpd.org

February 8, 2019

Ms. Edith Hannigan, Land Use Planning Program Manager
California Board of Forestry and Fire Protection
P.O. Box 944246
Sacramento, CA 94244-2460

Re: Program Environmental Impact Report for the proposed California Vegetation Treatment Program

Dear Ms. Hannigan:

The Rancho Simi Recreation and Park District is the owner of approximately 4000 acres of natural open space surrounding the communities of Simi Valley and Oak Park in the County of Ventura.

This open space contains a multitude of natural and environmental resources which functions as wildlife corridors and contains habitat that contributes to the biodiversity within the Santa Monica Mountains.

Since no "Initial Study" was prepared for the proposed California Vegetation Treatment Program, at this time the Park District does not have any comments in regards to the preparation of a Program Environmental Impact Report. We would, however, like to review and provide comments to the "Draft" Program Environmental Impact Report for proposed mitigation measures applicable to our region.

If you have any question or concerns, please feel free to contact me at (805) 584-4424 or by E-mail at wayne@rsrpd.us.

Sincerely,

Wayne Nakaoka
Director of Planning and Maintenance

Encls: 1 – Copy of Board of Forestry and Fire Protection Correspondence dated 1-30-2019

Cc. District Manager

Program EIR for the proposed CA Vegetation Treatment Program

Joyce Lopes <joyce.lopes@sonoma.edu>

Wed 3/6/2019 3:53 PM

To: CALVTP@BOF <CalVTP@bof.ca.gov>;

Cc: Dana Twedell <twedell@sonoma.edu>; Kristi Marian <marian@sonoma.edu>;

Warning: this message is from an external user and should be treated with caution.

Dear Edith Hannigan,

Thank you for including us in the public scoping meeting for the program EIR for proposed CA Vegetation Treatment Program. We have a few questions regarding the information that was shared.

- Will there be funding, grants available for Sonoma State to implement vegetation treatments to reduce wildfire risks and avoid/diminish harmful effects of wildfire on the people, property and natural resources of CA state? Please provide contacts and application process to procure funding.
- Provide extent of treatable landscape area specific to Sonoma State University.
- Provide findings, recommendations of treatment types, treatment activities specific to Sonoma State properties.
- Will there be an inspection sheet to obtain State Fire Marshal approval and to record work carried out?

Thank you for any additional information you can provide and for including us in the conversation.

Joyce Lopes
Vice President, Administration & Finance
(Preferred Pronouns: She, Her, Hers)
SONOMA STATE UNIVERSITY | 1801 Cotati Ave.
Rohnert Park, CA 94928-3609
Office: 707.664.2310 | Mobile: 707.601.9387| Fax: 707.664.3080
E-Mail: joyce.lopes@sonoma.edu
Please consider the environment before printing this email

Hannigan, Edith@BOF

From: David Spak <david.spak@bayer.com>
Sent: Wednesday, February 20, 2019 11:49 AM
To: CALVTP@BOF
Subject: RE: Is webinar over?

Thanks!

I am the Stewardship and Development Manager for Bayer Vegetation Management and have a question regarding the implementation of herbicide treatments. How will the herbicide program be developed? Will it target invasive brush, grasses, or both? Who will make those decisions? The reason I ask, we have a new, extended preemergence option for cheatgrass, medusahead, and other invasive annual grasses which is registered in California called Esplanade 200SC. Also, have the same product registered for conifer production just recently approved in CA called Espalnade F. Maybe you have heard of these products. Would be another tool for creating firebreaks. How can we help?

Thanks

Best regards,

David Spak
Manager, VM Stewardship and Development

///////////////////

Bayer US LLC
CropScience Division
Environmental Science Business
2 T.W. Alexander Drive
Research Triangle Park, NC 27709
Office phone: 919-549-2249
Mobile phone: 717-468-3251
E-mail: david.spak@bayer.com
Web: http://www.bayer.com

-----Original Message-----
From: CALVTP@BOF <CalVTP@bof.ca.gov>
Sent: Wednesday, February 20, 2019 11:57 AM
To: David Spak <david.spak@bayer.com>
Subject: RE: Is webinar over?

Yes, we muted the webinar since no further members of the public were in the audience to provide comment. I've attached the power point presentation but audio of the meeting will take a little bit longer.

-----Original Message-----
From: David Spak [mailto:david.spak@bayer.com]
Sent: Tuesday, February 19, 2019 12:32 PM
To: CALVTP@BOF <CalVTP@bof.ca.gov>
Subject: Is webinar over?

Webinar went silent after first oral comment.

Can I please get a copy of the presentation?

Sent from my iPad

The information contained in this e-mail is for the exclusive use of the intended recipient(s) and may be confidential, proprietary, and/or legally privileged. Inadvertent disclosure of this message does not constitute a waiver of any privilege. If you receive this message in error, please do not directly or indirectly use, print, copy, forward, or disclose any part of this message. Please also delete this e-mail and all copies and notify the sender. Thank you.

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Hannigan, Edith@BOF

From: David Spak <david.spak@bayer.com>
Sent: Thursday, February 21, 2019 8:16 AM
To: CALVTP@BOF
Subject: Question

I listened to the seminar on Tuesday and had a question about the implementation of herbicide treatments. How will the herbicide program be developed? Will the herbicide programs target invasive brush, grasses, or both? Who will make those decisions? Who will make the applications?

Thanks!

Best regards,

David Spak
Manager, VM Stewardship and Development

///////////////////

Bayer US LLC
CropScience Division
Environmental Science Business
2 T.W. Alexander Drive
Research Triangle Park, NC 27709
Office phone: 919-549-2249
Mobile phone: 717-468-3251
E-mail: david.spak@bayer.com
Web: http://www.bayer.com

Hannigan, Edith@BOF

From: Peter St. Clair <phstc@aol.com>
Sent: Thursday, January 31, 2019 9:22 PM
To: CALVTP@BOF
Subject: NOP VTPEIR (January 30, 2019

I fear the proposed new PEIR may suffer the same fatal flaws as the many previous iterations.

To avoid this result please consider the following:

1. Create at least three separate EIRs. One for Northern California and forested areas. Another for Central California including foothills and somewhat moister chaparral communities. A third for Southern California, chaparral, coastal sage scrub and desert lands. I think this can avoid the considerable CEQA compliance problem that is evident in the map "Treatable Landscape". The area is just too big and too diverse.

2. Significantly reduce the number of acres within "Treatable Landscape". I am unsure there is any evidence that VT in largely uninhabited areas protects structures and access within the WUI from wildfire. VT should bolster the creation and maintenance of defensible space around structures and access roads. VT is not an end in itself. It is only one tool of many.

Therefore,

3. Clearly state the alternatives to VT. Analyze them. The sections on alternatives in the prior EIR drafts have been woefully inadequate.

At a minimum the document must discuss PRC 4291 (defensible space) and why CalFire has refused to implement the sections that deal with safer buildings. CalFire has repeatedly called this a "local problem" and pushed issues of building code compliance down to the counties and cities.

Based on the alarming statements in the NOP, wildfire is no longer a local issue. Nor should implementation of PRC 4291 be.

Additionally, since PRC 4291 was rewritten about 10 years ago, our numerous WUI wildfires have destroyed a lot of homes. With each fire, insurance companies follow up their claims with scientific studies of the cause of destruction.

At least in Southern California (San Diego) the typical post fire analysis has cited burning embers blown by extreme Santa Ana winds as the cause of most ignitions.

Cleared space (as opposed to maintained defensible space as defined in the law) was viewed as an impediment to safety. Why? Cleared of less than highly flammable native or non native trees and shrubs, structures are exposed to blowing embers in a way they would not be if shrubs and trees of various height were left in place, but properly maintained.

Los Angeles County FD among others has researched and published a lot of information on which coastal sage scrub, chaparral and forest species (native plants) are more suited for defensible spaces than others.

Prior EIRs have ignored sources like insurance company investigations, LA County FD research, research by the federal government (U.C. Riverside Fire Lab as well as USGS)

Better still, the EIR should examine whether there are superior alternatives, in whole or part to VT.

These include:

Better enforcement of PRC 4291 and a broader role for CalFire in mandating creation and upgrade of safe structures, new or existing;

Changes in local planning protocols that have allowed structures (homes) to be built within the WUI, and more importantly, on the current edge of the WUI, which in fact extends the WUI into previously undeveloped lands;

Potential for "shelter in place" in WUI communities (this has worked extremely well in Australia and in some communities in the U.S. and CA including Hidden Meadows just north of Escondido, CA.

I am not going to rehash my extensive comments on prior EIRs. It is a shame you continue the sham of producing document after document that fails to comply with CEQA and fails to state facts as opposed to opinions.

Most prior EIRs have been little more than restatements of the proposed project itself.

Its time to look hard at what has worked (defensible space applied scientifically; upgraded building codes; VT for invasive exotics, flashy fuels and along access roads and to protect first responders) and what has not worked (prescribed fire in and near the WUI in Southern California. As CalFire has told me on more than one occasion after its prescribed fire got lose, "It burned too hot and too high". You cannot plan, get approvals for and conduct enough prescribed burns, at least in Southern California, to make a difference. Most of our prescribed burns are far from any population densities. Use the money for other things that work.)

Peter H. St. Clair
2341Whitman Street
San Diego CA 92103
619-260-1307

Stanislaus County

CHIEF EXECUTIVE OFFICE

Jody L. Hayes
Chief Executive Officer

Patricia Hill Thomas
Chief Operations Officer/
Assistant Executive Officer

Keith D. Boggs
Assistant Executive Officer

Patrice M. Dietrich
Assistant Executive Officer

STANISLAUS COUNTY ENVIRONMENTAL REVIEW COMMITTEE

February 15, 2019

Edith Hannigan, Land Use Planning Program Manager
California Board of Forestry and Fire Protection
PO Box 944246
Sacramento, CA 94244-2460

SUBJECT: ENVIRONMENTAL REFERRAL – CALIFORNIA BOARD OF FORESTRY AND FIRE PROTECTION – CALIFORNIA VEGETATION TREATMENT PROGRAM (CALVTP) – NOTICE OF PREPARATION OF A PROGRAM ENVIRONMENTAL IMPACT REPORT (PEIR)

Ms. Hannigan:

Thank you for the opportunity to review the above-referenced project.

The Stanislaus County Environmental Review Committee (ERC) has reviewed the subject project and has no comments at this time.

The ERC appreciates the opportunity to comment on this project.

Sincerely,

Patrick Cavanah

Patrick Cavanah
Sr. Management Consultant
Environmental Review Committee

PC:ss

cc: ERC Members

1010 10th Street, Ste. 6800, Modesto, CA 95354 Post Office Box 3404 Modesto, California 95353 Phone: 209.525.6333 Fax: 209.544.6226

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

JENNIFER LUCCHESI, *Executive Officer*
(916) 574-1800 *Fax* **(916) 574-1810**
California Relay Service TDD Phone **1-800-735-2929**
from Voice Phone **1-800-735-2922**

Established in 1938

Contact Phone: **(916) 574-1890**

March 1, 2019

File Ref: SCH # 2019012052

California Board of Forestry and Fire Protection
Attn: Edith Hannigan,
Land Use Planning Program Manager
PO Box 944246
Sacramento, CA 94244-2460

VIA REGULAR & ELECTRONIC MAIL (CalVTP@bof.ca.gov)

Subject: Notice of Preparation (NOP) for a Program Environmental Impact Report (PEIR) for the California Vegetation Treatment Program (VTP) Project, Statewide

Dear Ms. Hannigan:

The California State Lands Commission (Commission) staff has reviewed the subject NOP for a PEIR for the California VTP Project (Project), which is being prepared by the California Board of Forestry and Fire Protection (Board). The Board, as the public agency proposing to carry out the Project, is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq). The Commission has authority over all sovereign lands in the state and is the trustee of all state-owned school lands. Therefore, the Commission monitors all projects that could directly or indirectly impact these lands. The Commission will be acting as a responsible agency under CEQA and Commission staff requests that the Board consult with us on preparation of the Draft PEIR as required by CEQA section 21153, subdivision (a), and the State CEQA Guidelines section 15086, subdivisions (a)(1) and (a)(2).

<u>Commission Jurisdiction and Public Trust Lands</u>

The Commission has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The Commission also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. On navigable non-tidal waterways, including lakes, the State holds fee ownership of the bed of the waterway landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high-water mark, except where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

Based upon the information provided and review of in-house records, Commission staff has determined that it is unknown whether Project activities would occur on sovereign land. Therefore, it is possible that the Commission will have jurisdiction and that a lease or other approval for use of sovereign land may be required.

Commission Jurisdiction and School Lands

In 1853, the U.S. Congress granted to California nearly 5.5 million acres of land for the specific purpose of supporting public schools. (Ch. 145, 10 Stat. 244.) In 1984, the State Legislature passed the School Land Bank Act (Act), which established the School Land Bank Fund (SLBF) and appointed the Commission as its trustee (Pub. Resources Code, § 8700 et seq.). The Act directed the Commission to develop school lands into a permanent and productive resource base for revenue generating purposes. The Commission manages approximately 458,843± acres of school lands still held in fee ownership by the state and the reserved mineral interests on an additional 790,000± acres where the surfaces estates have been sold. Revenue from school lands is deposited in the State Treasury for the benefit of the Teachers' Retirement Fund (Pub. Resources Code, § 6217.5).

Furthermore, the school lands held in the SLBF include approximately 56,000 acres of forested lands that are particularly vulnerable to fire danger. Many of these lands are remote and isolated parcels that could benefit greatly from improved fuel reduction programs. Commission staff invites the Board and the Department of Forestry and Fire Protection (CalFire) to explore opportunities for a Memorandum of Agreement with the Commission that would facilitate these types of fire protection programs on school lands. Links to further information and an interactive map and GIS shape files of school lands can be found on the Commission's website at https://www.slc.ca.gov/land-types/school-lands/ and https://www.slc.ca.gov/gis/.

Project Description

The Board proposes to approve a vegetation treatment program over 20.3 million acres of State Responsibility Area (SRA) to meet the agency's objectives of reducing wildfire risk and reducing harm from wildfire to people, property, and natural resources statewide. The VTP would target 250,000 acres of nonfederal land per year for treatment.

From the Project Description, Commission staff understands that the Project would include the following components:

- Wildland-Urban Interface Fuel Reduction: These treatments would reduce fuel loads (vegetation) and slow or prevent the spread of fire to/from structures.
- Fuel Breaks: Areas where vegetation is managed or removed to actively support fire control.
- Ecological Restoration Projects: Treatment would focus on restoring ecosystem processes in areas that have experienced fire suppression or exclusion, departing from the natural fire regime.

All three components may include the use of prescribed fire, manual clearing, mechanical clearing, prescribed herbivory (beneficial grazing or browsing), and ground-level herbicide application.

Environmental Review

Commission staff requests that the following potential impacts be analyzed in the PEIR.

General Comments

1. Programmatic Document: Because the Project is being proposed as a "programmatic" rather than a "project-level" EIR, the Commission expects the Project will be presented as a series of distinct but related sequential activities (i.e., a regional or watershed analysis of potential vegetation management actions and associated mitigation, followed by a project-level proposal for vegetation management in a discrete area). The State CEQA Guidelines, section 15168, subdivision (c)(5) states that a program EIR will be most helpful in dealing with subsequent activities if it deals with the effects of the program as specifically and comprehensively as possible. In order to avoid the improper deferral of mitigation, a common flaw in program-level environmental documents, mitigation measures should either be presented as specific, feasible, enforceable obligations, or should be presented as formulas containing "performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way" (State CEQA Guidelines, § 15126.4, subd. (a)). As such, the PEIR should distinguish what activities and their mitigation measures are being analyzed in sufficient detail to be covered under the PEIR without additional project specific environmental review, and what activities will trigger the need for additional environmental analysis (see State CEQA Guidelines, § 15168, subd. (c)).

2. Project Description: A thorough and complete Project Description should be included in the PEIR in order to facilitate meaningful environmental review of potential impacts, mitigation measures, and alternatives. The Project Description should be as precise as possible in describing the details of all allowable activities (e.g., types of equipment or methods that may be used, maximum area of impact for different treatment methods with a focus on the worst-case scenario, seasonal work windows, locations for material or chemical disposal, etc.), as well as the details of the timing and length of activities. Thorough descriptions will facilitate Commission staff's determination of the extent and locations of its leasing jurisdiction, make for a more

robust analysis of the work that may be performed, and minimize the potential for subsequent environmental analysis to be required.

Biological Resources

3. Sensitive Species: The area encompassed by the Project includes habitat for sensitive or special status species that could be affected by vegetation treatment activities, both directly and indirectly (e.g., habitat destruction and fragmentation, erosion impacts on water quality and hydrology for aquatic and anadromous species, temperature and microclimate changes from alterations to existing systems). In order to ensure the PEIR is as complete and thorough as possible in disclosing and analyzing potential impacts to biological resources, the Board should conduct queries of the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) and U.S. Fish and Wildlife Service's (USFWS) Special Status Species Database to identify any special-status plant or wildlife species that may occur in the Project area. In addition, the Board should initiate consultation with the above agencies, and potentially include the National Marine Fisheries Service, to ensure the information is current and accurate and that all potential species are addressed. The PEIR should analyze the potential for such species to occur in the Project area and, if impacts to special-status species are found to be significant, identify clear and enforceable mitigation measures that would avoid or lessen the impact to the extent feasible.

   In addition, please have the PEIR clarify whether VTP activities could occur near or within submerged lands and the beds of navigable lakes and waterways. If so, the PEIR should clearly identify the type of activity and the associated impacts, including but not limited to construction of in-water infrastructure (bridges, trestles, coffer dams) and impacts to riparian corridors.

Climate Change

4. Greenhouse Gas (GHG): A GHG emissions analysis consistent with the California Global Warming Solutions Act (Assembly Bill [AB] 32) and required by the State CEQA Guidelines should be included in the PEIR to the extent feasible. This analysis should identify a threshold for significance for GHG emissions for identified regions, calculate the level of GHGs that could be emitted as a result of any associated construction as well as mechanized clearing and vehicle hauling for the Project, determine the significance of the impacts of those emissions, and, if impacts are significant, identify mitigation measures that would reduce them to less than significant. If a detailed, quantified analysis of GHG impacts is infeasible because of the programmatic nature of the PEIR, Commission staff suggests that GHG emissions be characterized and a discussion included in the Draft PEIR as to how impacts related to GHG emissions will be addressed in future individual project analysis.

Tribal Cultural Resources

5. Tribal Input: The PEIR will include a description of tribal outreach and consultation pursuant to AB 52 (Gatto; Stats. 2014, ch. 532) and document any impacts to Tribal

cultural resources. However, Commission staff strongly encourages the Board to reach out to and engage interested tribes to obtain information and recommendations regarding traditional tribal burn practices and vegetation management, and to explore opportunities to partner with tribes and provide access to their ancestral homelands.

The Commission adopted its Tribal Consultation Policy on August 9, 2016, and its Environmental Justice Policy on December 3, 2018. If a discretionary action comes before the Commission regarding the California VTP Project, then Commission staff will be looking to see whether tribal input has already been solicited and how it has been incorporated, in accordance with the aforementioned policies.

Additional Review

6. Deferred Mitigation: In order to avoid the improper deferral of mitigation, mitigation measures should either be presented as specific, feasible, enforceable obligations, or should be presented as formulas containing “performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way” (State CEQA Guidelines, §15126.4, subd. (a)).

Thank you for the opportunity to comment on the NOP for the Project. As a trustee and responsible agency, the Commission requests that you consult with us on this Project and keep us advised of changes to the Project Description and all other important developments. Please send additional information on the Project to the Commission staff listed below as the PEIR is being prepared.

Please refer questions concerning environmental review to Alexandra Borack, Senior Environmental Scientist, at (916) 574-2399 or Alexandra.Borack@slc.ca.gov. For questions concerning Tribal cultural resources and the Commission’s Tribal Consultation Policy, please contact the Commission’s Tribal Liaison, Jennifer Mattox, at (916) 574-0748 or Tribal.Liaison@slc.ca.gov. For questions concerning Commission leasing jurisdiction, please contact Jim Porter, Public Land Management Specialist, at (916) 574-1865 or Jim.Porter@slc.ca.gov.

Sincerely,

Eric Gillies

Eric Gillies, Acting Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
A. Borack, Commission
J. Mattox, Commission
P. Griggs, Commission
J. Fabel, Commission
J. Porter, Commission

February 5, 2019

Ms. Edith Hannigan
CalVTP Comments
California Board of Forestry and Fire Protection
P. O. Box 944246
Sacramento, CA 94244-2460
Email: CalVTP@bof.ca.gov

Re: CalVTP

When developing the CalVTP it is essential that Calfire take into account very significant environmental events that have occurred since the VTP Project was first under review starting in 2015.

During the last few years some of the dramatic environmental influences of climate change have become obvious such as high temperatures, drought, raging winds and adverse affects upon many wildlife and plant species.

Forests and chaparral are essential for providing cool shade for streams, creating and protecting soil, reducing rain and wind force, providing wildlife habitat and absorbing CO^2. Burning our forests and chaparral obviously exacerbates the adverse affects of climate change.

Streams become too warm for endangered and threatened species such as coho and steelhead salmon. Without protective vegetation, watersheds erode washing silt and precious topsoil into streams. Spawning gravel is embedded with silt and smothers salmon eggs. Without protection from vegetation, topsoil is washed away resulting in desertification*. No vegetation is left in order to build new topsoil. Many plant species can not grow because the hydrophobic soil can not hold water. The exposed ground is too hot for many species to grow again. Any new plant growth is exposed to plant eating animal and insect species that wander into the area searching for food. The burned areas are now open to opportunistic invasive species.

The devastating environmental impacts of climate change coupled with the catastrophic effects of incinerating our watersheds must be researched, documented and calculated. Calfire must determine scientifically whether reducing vegetative fuel loads offers benefits that out weigh the benefits of maintaining a healthy ecosystem by avoiding watershed devastation and species extinctions.

The proposed CalVTP fires would have numerous negative ecological effects. For instance, burning in the winter is not a usual part of the natural cycle and destroys flowering chaparral that produces the food base for many wildlife species. Applying pesticides at any time destroys wildlife habitat and may impact water quality far beyond parcel lines.

Furthermore, Calfire should research whether reducing fuel load in each area chosen would actually significantly reduce catastrophic wildfire damage in light of climate change, "the new normal."

Calfire staff explained to me that nothing would have prevented the Calfire Boggs Demonstration Forest from burning up during the Valley Fire in 2015. The carefully managed demonstration forest was dry, the winds were very high and embers blew great distances. Calfire was helpless to stop the fire storm.

Likewise, Calfire could not stop the Tubbs fire from jumping six lanes of Hwy. 101 and burning up a K-Mart and the Kohl's department store. These stores were surrounded by large parking lots and NO vegetative fuels.

Calfire should research whether doing VTPs in the areas surrounding Coffey Park in Santa Rosa would have eliminated the fire danger to Coffey Park. Calfire should produce scientific justification, not speculation, showing the VTP will actually reduce catastrophic fires like the Tubbs and Camp fires.

Calfire should produce a cost benefit analysis of the VTP. Is it more cost effective to spend wildfire prevention funds in a way other than with the VTP? Will the catastrophic effects of the VTP (watershed and species devastation, greenhouse gas increases, public health harm) be worth the sepculative VTP benefits to our society? If so, in what way?..how much?...what is the dollar amount?

EXAMPLE OF POLICY & PLAN VERSUS ACTUAL IMPLEMENTATION

Calfire has been doing prescribed burns under VMPs. The VMP had an EIR and policies. However, in the case described below, P. Gruchawka vs. Calfire, the Calfire staff implementing the VMP did not follow the VMP plan. Calfire should consider some major environmental VMP failures noted in the P. Gruchawka vs. Calfire lawsuit. For instance:

Calfire conducted the EXPIRED VMP burn on a NO burn day resulting in dense, polluting smoke enveloping the neighbors and obscuring visibility. This was a clear environmental impact.

Calfire trespassed by burning the Gruchawka property which was not included in the VMP area. Calfire burned riparian area on the Gruchawka property. Burning riparian habitat is illegal and clearly constitutes an environmental impact. Protected habitat (riparian zones as defined by CDFW, USACE, USFWS and RWQCB) need to be protected from Calfire burn operations.

Calfire was supposed to notify neighbors about a VMP. Calfire did not notify neighbors and neighbors were impacted by falling ash and poor air quality.

Calfire stated in the VMP document that there were no fish in Pieta Creek which flows through the property where the VMP was to be conducted. To the contrary, Pieta Creek is a spawning stream for threatened steelhead and the stream surveys conducted by CDFG document this fact. A casual "I didn't see a fish" by Calfire staff is not acceptable.

The neighbor (Gruchawka) located on the contiguous property to the planned VMP property was very concerned about potential environmental harm to the watershed supporting Pieta Creek which also flows through her property. Gruchawka and the fire chief met at her house prior to the VMP. The neighbor explained to the chief that there was a history of escaped "vegetative management" burns burning up her property. She did not want the watershed on her property damaged by fire. Calfire staff in the field do not have the training nor show concern to follow protocol to protect endangered and protected species.

During the expired VMP, on a no burn day, without notifying the neighbors and without knowing where the property lines were located, the Calfire helicopter dropped accelerants on the Gruchawka property. Calfire incinerated the wildlife habitat in the watershed above Pieta Creek on the Gruchawka property. Calfire had been specifically told by Gruchawka not to burn her property and she had explained the value of the habitat for the protected and threatened steelhead. The VMP had an EIR but that document did not stop the individual Calfire unit from poor decision making. Environmental oversight of Calfire unit staff must be a part of the CalVTP study.

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Calfire needs to weigh the harm caused by burning our environment and prove that benefits out weigh this harm. The document to be prepared will be useless if the scientific findings and resulting required mitigation is not strictly enforced. The document should clearly outline the funding for, and process of, enforcement for each mitigation measure.

Thank you for addressing these important issues.

Regards,

Nancy Summers

Nancy Summers
POB 670
Kenwood, Ca 95452

707-833-5027

**Dictionary result for "desertification"*
The process by which fertile land becomes desert, typically as a result of drought ***deforestation****, or inappropriate agriculture.*
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February 5, 2019

RECEIVED BY

FEB 11 2019

BOARD OF FORESTRY AND FIRE PROTECTION

Ms. Edith Hannigan
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P. O. Box 944246
Sacramento, CA 94244-2460
Email: CalVTP@bof.ca.gov

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SWEETWATER AUTHORITY
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(619) 420-1413
FAX (619) 425-7469
http://www.sweetwater.org

March 1, 2019

Ms. Edith Hannigan
Land Use Planning Program Manager
California Board of Forestry and Fire Protection
PO Box 944246
Sacramento, CA 94244-2460

Subject: Notice of Preparation of a Program Environmental Impact Report for the California Vegetation Treatment Program
SWA File: (Gen) Land Use and Environmental

Dear Ms. Hannigan:

Thank you for providing Sweetwater Authority (Authority) with a copy of the Notice of Preparation (NOP) of a Program Environmental Impact Report (PEIR) for the California Vegetation Treatment Program (VTP). We understand that the purpose of the NOP is to solicit comments on the scope and content for the PEIR, which will analyze the impacts of the proposed VTP.

The Authority owns and operates the Loveland Reservoir and Sweetwater Reservoir properties, which are located in the eastern portions of the Sweetwater River watershed, San Diego County. The 3,300-acre Loveland Reservoir property, which is mostly surrounded by undeveloped, forested, and rural lands, is considered a very high fire hazard severity zone (FHSZ). The 1,800-acre Sweetwater Reservoir property, which is surrounded by urban areas to the west and undeveloped lands and preserves to the east, is also considered a very high FHSZ. While only the eastern portion of the Sweetwater Reservoir property is located entirely within the State Responsibility Area (SRA), the entire Loveland Reservoir property is within the SRA. Both reservoirs and surrounding watershed lands are sources for drinking water for approximately 190,000 people, and are a vital part of the San Diego region's water supply.

The Authority provides the following comments on the VTP:

1. The scope of the VTP includes three types of treatment: (1) fuel reduction at the Wild-Urban Interface (WUI), (2) fuel breaks, and (3) ecological restoration projects. Essential infrastructure projects, such as dams and pump stations located in high and very high FHSZs, should be included in the analysis and considered part of the scope of the VTP. Essential infrastructure projects could

be incorporated in one of the existing categories or added as a fourth, stand-alone category. It is recommended that vegetation treatments for essential infrastructure projects are discussed in detail to ensure that reviewers and permitting agencies understand both the impacts and overall benefits associated with such vegetation treatments, such as ensuring safe access to dams during fires and other emergencies.

2. The PEIR should define in detail the VTP's proposed methods of vegetation removal and the mitigation measures that would be implemented to prevent watershed degradation and water quality impacts. Clearly defining the dimensions of the fuel reduction zones at the WUI and fuel breaks is highly recommended.

3. Prescribed fires are likely to result in a variety of environmental impacts. In terms of hydrology and water quality, burnt slopes are likely to erode during the wet season, resulting in the siltation and potential pollution of downstream surface water reservoirs and waterways. Prescribed fires may also result in the unanticipated burning of waste materials abandoned in forested lands. Mitigation measures based on the best available science and sound management strategies should be developed and adopted with the goal of protecting drinking water resources. Post-fire recovery should promote native cover crop species, where appropriate, as the method for rapid erosion protection and to prevent introducing non-native, invasive vegetation.

4. Herbicide applications may result in a significant impact to water quality. If the PEIR includes herbicide applications upstream of surface water reservoirs or near wells, mitigation measures based on the best available science and sound management strategies should be developed and adopted with the goal of protecting these drinking water resources and facilities.

5. The activities and projects that fall under the "Ecological Restoration Projects" category should be clearly defined in the PEIR, as ecological restoration could mean different things for different groups of people (e.g. general habitat revegetation activities, revegetation after wildfires, increasing the frequency of prescribed fires to mimic natural conditions, etc.).

The Authority appreciates the effort that the California Board of Forestry and Fire Protection is currently undertaking during the development of the VTP. If you have any questions, please do not hesitate to contact our Environmental Project Manager, Israel Marquez at imarquez@sweetwater.org, or (619) 409-6759.

Sincerely,

SWEETWATER AUTHORITY

Ron R. Mosher

Ron R. Mosher
Director of Engineering

RRM:IM:vn

cc: Israel Marquez, Sweetwater Authority
Pete Famolaro, Sweetwater Authority

From: Wayne Tyson <wt750mv@gmail.com>
Sent: Friday, March 1, 2019 10:45 AM
To: Hannigan, Edith@BOF
Subject: Re: Notice of Preparation: CalVTP

Below please find a corrected copy of the piece I sent to you yesterday. Please forward it as necessary.

Wayne Tyson

DRAFT

How to Prevent Major Fire Disasters

Wayne Tyson

I spearheaded and chaired a San Diego Wildland-Urban Interface Interagency Fire Task Force following the Kitchen Creek/Laguna Mountain Fire of 1970. I have written several Op-Ed pieces for The Los Angeles Times, The San Diego Union/Tribune, The San Francisco Chronicle, The New York Times, and other newspapers across the country via the wire services. I have worked for the U. S. Forest Service, and invented a simple and cheap technique for cost-effective ecosystem restoration in 1969 while working for the City of San Diego as park construction inspector, general supervisor for resource-based parks (Balboa and Mission Bay), and park planner. I served in the United States Air Force Security Service and Strategic Air Command Intelligence.

I made extensive use of the U. S. Forest Service's Western Region Fire Laboratory and its fire scientists in putting together a draft *Task Force Report on Wildland Fire Hazard Reduction and Open Space Management* in 1970-71. That report/program attempted to employ the current state of fire science, and one might think that it should be out of date by now. I regret to report that many of its elements that are still valid have apparently not been adopted by most fire agencies, even today—as evidenced by much of the content in the *Program Environmental Impact Report Notice of Preparation*. Still, my task force report had its shortcomings, and some of its elements were discarded soon after its preparation. I have learned much in the intervening years. Had I been as knowledgeable then, that knowledge would have been included.

My career has included stock farming, tree surgery, landscape design, park construction inspection, park design and planning, park management, and ecosystem restoration.

None of us knows everything. The most dangerous ideas are those that are closed to reasoned modification. I hope that my contributions will be taken seriously as an attempt to help reach the goal of fire-safe communities.

Unfortunately, after decades of pursuing practical and simple solutions in this regard, I have seldom found officialdom very receptive. For that reason, I am guardedly optimistic that, at long last, some of these solutions will find fertile ground in a more enlightened generation.

So it is in a positive spirit that I must be critical, *not* of the *people* who have worked so hard putting this kind of work together, *but* of the *concepts* that do not bear up under logical and scientific scrutiny.

I, too, once embraced many of the traditional concepts, but that was decades ago. The reason I did is for the same reason that many people embrace them today—they *seem* so "logical," so *intuitively* true. And, of course, they contain a *degree* of truth.

So what are these concepts and what is "wrong" with them?

Let's look at them in the light of the tried and true "fire triangle" of *fuel, temperature*, and *oxygen,* ALL of which MUST be present in the right amounts and possessing the right qualities for ignition and for sustained burning. Fire *intensity* is dependent upon the *degree* to which each of those factors is present—more *readily combustible* fuel equals more fire (in wildland fires, the rapidly-moving flame front—the most difficult to control—only the fuels having the quality of being less than a mere half-inch in diameter ~~is~~ are involved at the temperature ranges found in the worst conditions. Larger-diameter fuels *may* continue to burn following flame-front passage, but with few exceptions (such as slash fuels left behind following logging operations). In most cases, relatively little of the larger-diameter fuels (e.g., tree trunks and branches and even the brush branches larger than a half-inch) continues to burn, and usually is the last priority for fire control—"mop-up operations."

First and foremost is the illusion that controlling the fuel is the solution—no fuel, no fire. Correct—in theory. But in practice, fuel control may be the least effective option of all. There is too much of it; it is *quantitatively* impossible to remove all of the fuel. Removing one class of fuels means that it will eventually (and soon) be replaced (plants *grow*—that's what they *do*!), often by other fuels—with a *greater* potential for ignition and intensity of burning than existed before removal. Once a fire gets going, it creates its own, dry, pre-heated fuel ahead of it. So much for all the concern about drought and dead trees in the forest. What counts is next to structures and other human works—that's where to spend the money, not in the middle of the fuel, but where the fuel meets homes and other structures.

As to fuel "control" methods and practices, the most popular ones may be the most *ineffective*. Control is a demonstrable illusion (once the fire is larger than the suppression force capabilities, which almost always happens in the case of wind-driven [more oxygen] fires). Continuing to fight the worst (wind-driven) wildland fires well beyond human habitations and other works, and persisting in applying clearly impotent measures is futile—suppression forces are then potentially more effective at the edge of those habitations and works, and extinguishing "spot" fires, especially structure fires, before they, too, outgrow suppression force capabilities. Continuing to apply inadequate measures to such large fires makes for little more than dramatic TV, where the rule of press coverage is: "If it bleeds, it leads!"

Not all so-called "best-practices" and technological "fixes" are necessarily bad. Aerial suppression forces, for example, need to be balanced with the challenge. Aerial fire suppression is one of the *potentially* very effective tools for ensuring very rapid response times, but expensive though it may be, much more of it will be required if we are going to get serious about stopping mega-fires before they get started. Sufficient equipment and crews, both aerial and ground, need to be strategically located for very rapid response and overwhelming quantities. Otherwise, we cannot win. Would we send a small detail into a major battle? Of course not. They could not win. The largest, fastest, most overwhelming force is what is *required* to vanquish the firestorms before they grow to unmanageable size—which, especially when driven before big winds, they always do. There is, however, a size of wildfire that is too big for all the government's airplanes and all the fire suppression fluids to control—that's why extremely rapid response times (along with, of course, high-tech, immediate ignition detection), are CRUCIAL!

"Prescribed" burning may have some effect upon future fires in *some* forests, but may be difficult to contain, especially if some factor in the "prescription" changes, such as wind velocity and/or direction. Fuel structure, composition, and interrelationships are notoriously difficult to calculate, and typically fall to a "guess" by the person doing the evaluation. Conditions are *always* bad in brush, and attempting to burn in brush fields or dense understory is folly—whistlin' past the graveyard.

"Mastication" is one of those "technical"-appearing "fixes" that is not only ridiculously expensive (follow the money), it is a counter-productive and short-lived practice that simply cannot quantitatively get the job done—do the math; it doesn't pencil out. The chips left behind by the giant brush-chippers are perfect ember-fuel and subject to spot-fires as well as providing huge increases in potential ember-fuel. The fire "breaks" created are just as impotent to stop wind-driven embers from crossing them as are freeways and rivers (complete fuel reduction). Graded "firebreaks" quickly become weed patches--flash fuels that increase ignition potential. Firebreaks give the fire a break!

Rather than squandering scarce resources on such largely useless and frequently counter-productive measures, *invest* those resources where they will be fully effective and have long-term—no, *permanent* value, not to mention saving lives and property. Ensuring that the balance between fire suppression capabilities and worst-case scenarios is tipped in favor of the capabilities is essential.

At the point of the disaster's beginning, the habitations and structures themselves, is the most critical juncture in the phenomenon. Since most such structures are, by definition, not defensible at the point when projected flame front arrival-time approaches evacuation time, suppression forces must abandon their structure-protection and fall back to safer defensible positions. However, the requirement for structure-defense continues (actually *intensifies*) as the flame-front approaches, temperatures rise, and ember-loads increase. The most effective option at and before this hypercritical stage develops is an on-site, independent, automatic/remote-controlled fire suppression system that completely protects the structure from ignition, inside and out, whether initiated by burning or glowing-hot materials like embers, radiant heat from the flame-front, or a combination of them. Mere sprinklers on the outside are not good enough. The exterior suppression system must be windproof to be ember-proof.

Yes, meeting the challenge of disastrous fires will be "expensive," but billions need not be squandered fruitlessly. And yes, the measures suggested here will most certainly be met with wails of opposition from the forces that embrace tradition (and the money that is connected with it—but they needn't worry; their sacred cows will not be gored—this call to action involves *more* investment, not less). But tradition is demonstrably not getting the job done. Remember Paradise! And don't forget all the other fire disasters that overwhelmed conventional suppression forces and outdated strategies.

Throwing more and more ineffective and expensive measures and strategies at the challenge and expecting to gain the upper hand on disastrous fires is going to be, well, a burning issue for a long time. It's time to quench the "bonfire of the vanities."

On Wed, Jan 30, 2019 at 12:05 PM Hannigan, Edith@BOF <edith.hannigan@bof.ca.gov> wrote:

> January 30, 2019
>
> You are receiving this **Notice of Preparation** from the California Board of Forestry and Fire Protection (Board) for the California Vegetation Treatment Program Program Environmental Impact because you have commented on similar past projects initiated by the Board.
>
> The public comment period for the Notice of Preparation of the Draft Environmental Impact Report is set from January 30, 2019 to March 1, 2019.
>
> If you have questions or need more information please contact Edith Hannigan at (916) 862-0120 or CalVTP@bof.ca.gov.
>
> Sincerely,
>
> Matt Dias
>
> Executive Officer
>
> California Board of Forestry and Fire Protection

UNIVERSITY OF CALIFORNIA, BERKELEY

BERKELEY • DAVIS • IRVINE • LOS ANGELES • MERCED • RIVERSIDE • SAN DIEGO • SAN FRANCISCO — SANTA BARBARA • SANTA CRUZ

SENT VIA U.S MAIL and EMAIL

February 28, 2019

California Board of Forestry and Fire Protection
Attn: Edith Hannigan, Land Use Planning Program Manager
Email: CalVTP@bof.ca.gov
PO Box 944246
Sacramento, CA 94244-2460

Subject: Response to Notice of Preparation of a Program Environmental Impact Report for the California Vegetation Treatment Program

Dear Ms. Hannigan,

UC Berkeley has received the Notice of Preparation of a Program Environmental Impact Report (PEIR) for the California Vegetation Treatment Program (CalVTP). UC Berkeley is interested in participating as a responsible agency under the CalVTP.

The UC Berkeley Hill Campus consists of roughly 1,000 acres of steep and rugged land within the wildland-urban interface (WUI) located in an area identified by CAL FIRE as Very High Hazard Severity Zone. While the Hill Campus does not fall within the State Responsibility Area (SRA), UC Berkeley manages the following reserves and field stations located throughout the state that may be located with the SRA:

Name	Acreage	County
Angelo Coast Range Reserve	7,735	Mendocino
Blue Oak Ranch Reserve	3,259	Santa Clara
Chickering American River Reserve	16,875	Placer
Hastings Natural History Reservation	2,373	Monterey
Point Reyes Field Station	200	Marin
Hans Jenny Pygmy Forest Reserve	70	Mendocino
Sagehen Creek Field Station	9,000	Nevada
Blodgett Forest	4,270	El Dorado
Whitaker's Forest	320	El Dorado
Baker Forest	120	Plumas
Russell Research Station	283	Contra Costa
Central Sierra Snow Lab	2	

I will assume the role as campus contact for the CalVTP. My contact information is below

Sincerely,

Sally McGarrahan
Associate Vice Chancellor – Facilities
2000 Carleton Street
Berkeley, CA 94704
Email: smcgarrahan@berkeley.edu
Phone: 510-643-5560

OFFICE OF THE STATE FIRE MARSHAL
Designated Campus Fire Marshal
Office of Emergency Services
University of California Santa Cruz
105 Carriage House Road, Santa Cruz CA 95064

Date: February 26, 2019

RE: CA Vegetation Treatment Program (CalVTP)
Board of Forestry and Fire Protection

This letter is for receipt and acknowledgement of intended interest to participate as a responsible agency under the CalVTP. University of California Santa Cruz lies on 2001 acres or rolling, forested hills at the base of the Santa Cruz Mountains, overlooking the Pacific Ocean and Monterey Bay. Additionally, per the Office of The State Fire Marshals - Designated Campus Fire Marshal program, our jurisdiction extends beyond Santa Cruz County and into San Mateo County, Santa Clara County and Monterey County. Below is a list of all our jurisdiction assets:

<u>Santa Cruz County</u>
University of California Santa Cruz & Natural Reserve: approximately 2020 acres
UC Santa Cruz Coastal Campus & Younger Lagoon Natural Reserve: 72 acres
Other lands within the city of Santa Cruz: approximately 20 acres

<u>San Mateo County</u>
Ano Nuevo Natural Reserve: 25 acres

<u>Santa Clara County</u>
Lick Observatory: 1390 acres

<u>Monterey County</u>
Fort Ord Natural Reserve: 605 acres
Landels-Hill Big Creek Reserve: 9856 acres

TOTAL: 13988 acres

As Lead Designated Campus Fire Marshal for University of California Santa Cruz, I will assume the role as campus contact for the Cal VTP. My contact information is listed below.

Sincerely,

Nicholas J Otis

Nicholas Otis
Lead Designated Campus Fire Marshal
University of California, Santa Cruz
Tel: 831.459.3473
Cell: 831.247.7390
notis@ucsc.edu