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Subject: COMMUNITY RECOMMENDATION - CARB should consider Public Lands Forests a "Community" to receive pollution monitoring

28 February 2018

TO: California Air Resources Board
Karen Magliano, Director, Office of Community Air Protection, karen.magliano@arb.ca.gov
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Jeremy Herbert, Staff Air Pollution Specialist, jeremy.herbert@arb.ca.gov

RE: **COMMUNITY RECOMMENDATION** - CARB should consider Public Lands Forests a "Community" to receive pollution monitoring

Thank you for the opportunity speak with each of you and to participate in the California Air Resources Board (CARB) technical summits on the implementation of the AB 617 [Community Air Protection Program](#) and the community-focused action framework to reduce exposure in communities most impacted by air pollution.

During the general meeting and several sections of the workshop, I recommended that CARB consider Public Lands Forests in the Sierra Nevada as a unique "Community" to receive AB 617 funding for community-level air quality monitoring and any other emission reduction programs. Science indicates that Public Lands Forests in the Sierra Nevada, like Giant Sequoia National Monument, Sequoia National Forest, and Sequoia and Kings Canyon National Parks, are being severely impacted by climate-changing air pollution from the San Joaquin Valley, which is exacerbating the massive tree die-off from drought.

California and Federal agencies propose, in order to save these forests from wildfires, that they be logged, which science indicates would release carbon from forests and forest soils, rather than sequester carbon, and would instead exacerbate climate change.

At the very least, CARB could fully instrument the "forest community" to determine the concentration of every pollutant that reaches the "forest community" in order to forensically identify the sources of the pollutants in question, so the specific sources can be addressed with meaningful reduction guidelines, criteria, and regulations to reduce impacts to these under-represented forest communities that are being impacted by San Joaquin Valley air pollution.

Below is a brief discussion of how the giant sequoias and other forest species are being impacted by air pollution from the San Joaquin Valley.

Impacts on Public Lands Forest Health of the Sierra Nevada

The world's climate is changing. Increased temperatures and levels of atmospheric carbon dioxide as well as changes in precipitation and in the frequency and severity of extreme climatic events are just some of the changes occurring. These changes are being aggravated by significant methane emissions from livestock. These changes are having notable impacts on the world's forests and the forest sector through longer growing seasons, expansion of insect species ranges, low snowpack, and increased frequency of forest fires.

Smog from the Central Valley has settled in Sequoia and Kings Canyon National Parks, home of the giant Sequoias. Smog from the neighboring Central Valley is making it tougher for seedlings from the giants to take hold, and the needles of surrounding Jeffrey and Ponderosa pines are yellowing, symptoms of ozone toxicity. Smog is created when the sun's rays hit pollutants such as oxides of nitrogen and volatile organic compounds that are in motor vehicle exhaust, solvents, pesticides, gasoline vapors and decaying dairy manure. (See air pollution and drought effects Sierra ecosystems <http://treephys.oxfordjournals.org/content/24/9/1001.full.pdf> and <http://www.sfgate.com/science/article/Sequoia-National-Park-Worst-air-pollution-3591161.php>) A previously unrecognized source of nitrogen oxide is contributing up to about 40 percent of the NOx emissions in California, according to a new study. The study traces the emissions to fertilized soils in the Central Valley region. <https://www.sciencedaily.com/releases/2018/01/180131160352.htm> and <http://advances.sciencemag.org/content/4/1/eaao3477.full>

The impacts to federal public forestlands is not just from ozone. Methane emissions in the Central Valley (presumably both from oil industry and livestock emissions) are the second largest methane concentration "hot spot" plume in the United States. (http://science.nasa.gov/science-news/science-at-nasa/2014/09oct_methanehotspot/) Methane is very efficient at trapping heat in the atmosphere and, like carbon dioxide, it contributes to global warming.

The Four Corners area is the major U.S. hot spot for methane emissions while the Central Valley is the second largest concentration based on data from 2003–2009.

This Central Valley methane "hot spot" has possibly contributed to the increased forest temperatures and reduced snow pack that are reducing available water flow to the valley and also stressing public lands forests in California's Sierra Nevada. Federal public forestland management issues are intensified by increasing temperatures, loss of moisture, increased insect activity, and greater chance of wildfires that may, in part, be attributed to the heat-absorbing effects of methane on the forest.

As climate change conditions fluctuate from drought to high-intensity, warm rainfall, mountainous western watersheds are expected to experience more frequent winter and early spring flood events, runoff, and soil erosion. (8 see below), (9 see below) the continued unreasonable use of water for livestock feed crops that produce methane will only further exacerbate climate change and the impacts to forests and downstream communities.

(8) "Global warming is expected to lead to a more vigorous hydrological cycle, including more total rainfall and more frequent high intensity rainfall events. Rainfall amounts and intensities increased on

average in the United States during the 20th century, and according to climate change models they are expected to continue to increase during the 21st century. These rainfall changes, along with expected changes in temperature, solar radiation, and atmospheric CO2 concentrations, will have significant impacts on soil erosion rates.” (Expected climate change impacts on soil erosion rates: A review by MA Nearing, et al., 2004) <http://www.jswconline.org/content/59/1/43.short>

(9) “Possible changes in runoff patterns, coupled with apparent recent trends in societal vulnerability to floods in parts of North America, suggest that flood risks may increase as a result of anthropogenic climate change (see Section 15.2.5). Changes in snowpack accumulation and the timing of melt-off are likely to affect the seasonal distribution and characteristics of flood events in some areas. For example, in mountainous western watersheds, winter and early spring flood events may become more frequent (Melack et al., 1997; Lettenmaier et al., 1999).” (Climate Change 2001: Impacts, Adaptation, and Vulnerability, by James J. McCarthy, Co-Chair of IPCC Working Group II, et al.) <http://treconservice.com/onep/wp-content/uploads/2015/01/Impacts-Adaptation-and-Vulnerability.pdf> and https://books.google.com/books?hl=en&lr=&id=RT7lQ24quc4C&oi=fnd&pg=PA1&dq=Adaptation,+and+Vulnerability,+by+James+J.+McCarthy&ots=otTb0qfnMW&sig=zVOPtC81b2J_PA83ZdjW3SI3fNc#v=onepage&q=15.2.5&f=false

Attached is the 21 November 2016 comment letter from Sequoia ForestKeeper® to CARB on the 2030 Target Scoping Plan Up-Date: Natural and Working Lands. Exhibit A, at the end of the document, is the 8 August 2016 comment letter from Sequoia ForestKeeper® containing Recommendations for Reducing Air Pollution for Communities at Risk submitted to the CARB EJ Advisory Committee. This comment letter contains many links to other Sequoia ForestKeeper® comment letters on Climate Change, Greenhouse Gases, Short-lived Climate Pollutants, and Methane in particular.

I am available for any questions you might have.

Thanks for all you do.

Ara

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