To: California Air Resources Board
Re: 2030 Target Scoping Plan Update Concept Paper
Date: July 1, 2016

Save the Redwoods League applauds the California Air Resources Board for integrating the forestry sector and natural environment into the goals for achieving GHG reduction targets by 2030. The forests of California are a critical carbon storage asset and iconic symbol of California's heritage, yet without public investment in their further protection and restoration, forest condition and their associated ecosystem services will decline over time. By increasing the State's commitment to forest health, not only will our natural landscapes sequester and store more carbon, but Californians will benefit from increased water quality and yield, enhanced habitat for endangered species, and access to spectacular recreational resources.

All four of the concepts identified in the concept paper includes goals for natural and working lands that, if achieved, will significantly improve the conditions of California's forests while contributing to the State's 2030 GHG reduction targets. We strongly encourage the Scoping Plan to prioritize natural landscape investments with a science-based framework to protect and restore ecosystems with the highest likelihood of carbon capture and storage:

- **Each year, 500,000 acres of nonfederal forest lands included in restoration plans oriented towards forest health and carbon storage** – We recommend investing in restoration implementation, not simply restoration plans. Restoration forestry has high potential to significantly accelerate carbon sequestration in young and degraded forests. Research clearly shows that larger trees sequester carbon faster than younger trees (Sillett et al. 2010), so stimulating the growth of small trees now will produce higher carbon stocks faster and help the State achieve its GHG reduction goals sooner. There is urgency to increasing the pace of forest growth for carbon storage and for the numerous other benefits associated with forest restoration including expanding habitat for endangered species and improving water quality. We recommend that the Scoping Plan include policies to encourage restoration on private land and financing mechanisms to pay for restoration on the state's public lands. Within the land owned by the state and thus within direct state control, there is a critical need

and opportunity to restore the coast redwood forest and increase carbon storage capacity. California State Parks owns more than 100,000 hectares of the coast redwood ecosystem and more than 70% of this forestland was once harvested and is in need of restoration.

- **Ambitious land preservation policies** – We recommend prioritizing the protection of forests to prevent conversion and loss of associated ecosystem carbon storage. There is urgency to protect the forests with the highest carbon sequestration potential because more than 70% of the coast redwood ecosystem is privately owned and conversion threats from development, vineyards, and marijuana agriculture are increasing.

- **Increase habitat acreage protected or restored** – We recommend setting not only high goals for acreage of habitat to protect and restore, but prioritizing acres with the highest potential to store carbon for the long term. A growing body of scientific evidence shows that the coast redwood forest ecosystem continues to sequester carbon rapidly even as climate changes (Sillett et al. 2015), stores more carbon aboveground than any other forest on Earth (Van Pelt et al. 2016), and can store significantly more carbon if restored (Madej et al. 2013).

The concept paper points out that the "Scoping Plan will require us to consider what policies are needed for the mid-term and long-term, knowing that some policies for the long-term must begin implementation now." It also acknowledges that "the approach we take must balance risk, reward, longevity and timing." In that context, it asks the question: **For the forest sector, are we comfortable with policies that may result in some near-term carbon loss, but ultimately support more resilient and healthier forests in the longer timeframe?** The near-term risk of carbon loss through ecological forest management to improve forest conditions is scaled to the treatment applied (Madej et al. 2013; van Mantgem et al. 2013), but studies show that biomass loss can be quickly ameliorated by the resulting enhanced forest growth (van Mantgem and Das 2014). For example, in the iconic and treasured coast redwood and giant sequoia forests, there are phenomenal carbon storage opportunities that can only be realized through improved forest management techniques that by necessity lower carbon stocks temporarily:

- **Giant sequoia groves in the Sierra Nevada boast remarkable aboveground carbon stocks of more than 1,500 metric tons in live trees per hectare** (Robert Van Pelt, Redwoods and Climate Change Initiative). More than 80% of this carbon resides in giant sequoia wood and bark alone. Yet, decades of fire exclusion threaten the regeneration of giant sequoia and growth of the largest trees on Earth. In the absence of fire, dense of stands of other conifers (primarily white fir) thicken beneath the canopy of ancient giant sequoia, increasing risk of crown fires and reducing giant sequoia access to water and nutrients through belowground competition. Mechanical thinning of sub-canopy trees or prescribed

burning removes some forest carbon temporarily, but stimulates giant sequoia growth and seedling establishment which results in more vigorous and resilient forest stands (York et al. 2010; York et al. 2011).

- **Old-growth coast redwood forests in Northern California contain more than 2,000 metric tons of carbon per hectare** which is more than twice the carbon stocks found in other forests world-wide (Van Pelt et al. 2016). Individual large coast redwood trees can contain more than 200 metric tons of carbon per tree and sequester carbon faster than smaller trees (Sillett et al. 2015), but unfortunately more than 95% of the coast redwood range (600,000 hectares) has been cut at least once and most of the large redwoods are gone. Today young, dense stands of harvested coast redwood forest face impediments to recovery (e.g. stagnated growth from competition) that limit their ability to realize their carbon storage potential. Restoration forestry reduces tree competition and accelerates stand growth (Lindquist 2004; O'Hara et al. 2010; Oliver et al. 1994), setting carbon-limited young forests on a trajectory to more quickly sequester carbon and enhance habitat quality for numerous species. The ecological gains from such restoration forestry significantly outweighs the temporary carbon losses associated with its implementation.

We greatly appreciate the opportunity to provide comments on the concept paper and support robust policies and funding for forest protection and restoration as a critical strategy for reaching the state's ambitious 2030 GHG reduction goals.

Sincerely,

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Director of Science and Education

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