



September 15, 2009

Mary Nichols, Chair  
California Air Resources Board  
1001 I. Street  
P.O. Box 2815  
Sacramento, CA 95812

**Re: Consideration of the Climate Action Reserve Forest Project Protocols**

Dear Chairman Nichols:

At the upcoming September 24 meeting of the California Air Resources Board, the Board is scheduled to consider for adoption the “Updated Forest Project Protocols for Greenhouse Gas Accounting” as adopted by the Climate Action Reserve earlier this month. These protocols contain a provision that appears to explicitly encourage forest clearcutting. We are writing to express our strong opposition to this provision, and to urge you not to adopt the protocols with this provision included. In addition, we urge you to postpone the adoption of the forest protocols, in order to allow the Board adequate time to consider the issue after receiving public testimony.

This provision was inserted as a single new paragraph by Climate Action Reserve staff into the June 22, 2009, version of the updates, after the May version proposed by the stakeholder working group. The section is found in the Forest Project protocols in Section 3.9:

*Harvesting using even-age management must be conducted in stands no greater than 40 acres. Stands adjacent to recently harvested (even-age) stands must not be harvested using an even aged regeneration harvest until a recent even-aged regeneration harvested stand is 5-years old, or the average height of the regeneration in the recently harvested stand has achieved a height of 5 feet. On a watershed scale up to 10,000 acres all projects must maintain, or make progress toward maintaining, no more than 40 percent of their forested acres in ages less than 20 years. Areas impacted by a Significant Disturbance are exempt from this test until 20 years after reforestation of such areas.*

Although this paragraph was inserted into the section titled “Natural Forest Management,” it is entirely inconsistent with, and explicitly contradicted by, the definition of natural forest management in the same protocols, which requires forest projects to “*promote and maintain a diversity of native species and utilize management practices that promote and maintain native forests comprised of multiple ages and mixed native species at multiple landscape scales.*” (Sec. 3.9.2). It seems impossible for even-aged management, particularly clear-cutting, to meet those overarching requirements.

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The forest protocols were purportedly designed not only to help achieve greenhouse gas reductions, but also to provide a range of significant public and environmental benefits including clean water, biodiversity, fish and wildlife habitat, recreation, and aesthetics. The newly included paragraph incorrectly implies that clearcutting can achieve these goals, while severely mischaracterizing and omitting the regulatory requirements that govern forest practices in California. Consequently, the new paragraph would allow practices that exacerbate climate change while simultaneously causing a loss of important co-benefits for fish and wildlife habitat and biodiversity in California and other states.

Scientific, peer-reviewed studies show that clearcutting is the worst option for reducing forest carbon emissions. We have attached as an addendum to this letter our previous comments to the Climate Action Reserve, which provide an overview of the science regarding the climate and ecological impacts of forest clear-cutting.

The ARB staff report “Proposed Adoption of the Updated Climate Action Reserve Forest Project Protocol,” released September 10, 2009, failed to mention this controversial new paragraph in any way. Instead, the staff report merely asserts that the protocol update “[i]mproves co-benefits (refines definition of ‘natural forest management’ and requires sustainable harvesting practices)...” without mentioning the forest clearcutting provision. Therefore, the September 24 board meeting will be the first opportunity for the Air Resources Board to hear concerns from the public regarding this provision.

Given the misleading nature of the provision, and the potentially extreme negative impacts associated with clear-cutting, the most appropriate solution is to eliminate the new paragraph before adoption of the protocols by the Air Resources Board. At the very least, we urge you to postpone adoption of the protocols to allow the Air Resources Board time to consider the implications of the provision following the September board meeting.

Thank you for considering these comments. Please contact us if you have any questions.

Sincerely,



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September 1, 2009

**VIA HAND DELIVERY**

Linda Adams, Chair  
Climate Action Reserve  
523 W. Sixth Street, Suite 428  
Los Angeles, CA 90014

**Re: Forest Project Protocol, Version 3.0**

Dear Secretary Adams and members of the Climate Action Reserve board:

We are writing to express our strong opposition to a provision contained in Section 3.9 of the proposed Forest Project Protocols which appears to allow clearcutting. Specifically, we urge the board to remove the following section from the proposed protocols:

*Harvesting using even-age management must be conducted in stands no greater than 40 acres. Stands adjacent to recently harvested (even-age) stands must not be harvested using an even aged regeneration harvest until a recent even-aged regeneration harvested stand is 5-years old, or the average height of the regeneration in the recently harvested stand has achieved a height of 5 feet. On a watershed scale up to 10,000 acres all projects must maintain, or make progress toward maintaining, no more than 40 percent of their forested acres in ages less than 20 years. Areas impacted by a Significant Disturbance are exempt from this test until 20 years after reforestation of such areas.*

We note that this paragraph did not exist prior to the publication of the June 22, 2009, draft of the protocols.

This paragraph was apparently based on the existing Board of Forestry (“BOF”) forest practice regulations, but with critical omissions – the current BOF rules generally limit the size of contiguous clearcuts to 20 acres, separated by a buffer at least 300 ft. in all directions. Under some circumstances, the BOF rules allow the licensed forester preparing a timber harvesting plan (“THP”) to increase the 20-acre limit to a maximum of 40 acres, but only if the Director of the Department of Forestry and Fire Protection makes specified findings.

See 14 CCR 913.1 (2009):

Evenaged management systems shall be applied with the limitations described by this rule . . . The regeneration harvest of evenaged management shall be limited to 20 acres for tractor yarding. Aerial or cable yarding may be 30 acres. Tractor yarding may be increased to 30 acres where the EHR is low and the slopes are < 30%. The RPF may propose increasing these acreage limits to a maximum of 40 acres, and the Director may

agree where measures contained in the THP provide substantial evidence that the increased acreage limit does any one of the following: (A) by using additional on-site mitigation measures, reduce the overall detrimental effects of erosion thereby providing better protection of soil, water, fish and/or wildlife resources; or (B) provide for the inclusion of "long corners", or (C) create a more natural logging unit by taking maximum advantage of the topography; or (D) will increase long-term sustained yield; or (E) provide feasible off-site mitigation measures that can be incorporated in the plan to restore or enhance previously impacted resource areas or other environmental enhancements that will result in demonstrable net environmental benefits within the planning watershed. These measures may include, but are not limited to, watercourse restoration, soil stabilization, road surface stabilization, road outsloping, road abandonment, road reconstruction, enhancement of wildlife habitats and vegetation management.

At the same time, the protocol includes a 5 feet/5 year rule whereby clearcutting can occur directly adjacent to another clearcut (thereby obviating even the 40 acres rule) as long as the earlier clearcut happened 5 years ago *or* growth on the earlier clearcut is five feet high. Such a rule could allow exceptionally large areas to be devoid of canopy cover which is deleterious to wildlife and water.

In addition, this new paragraph is inconsistent with, and explicitly contradicted by, the definition of "Natural Forest Management" contained in the same section and which requires uneven-aged management. Section 3.9.2 says this about "Natural Forest Management":

*All Forest Projects must promote and maintain a diversity of native species and utilize management practices that promote and maintain native forests comprised of multiple ages and mixed native species at multiple landscape scales ("Native Forest Management").*

We note that it is not possible for even-aged management, particularly clearcutting, to create "native forests comprised of multiple ages and mixed native species at multiple landscape scales." Instead, such logging practices typically result in mono-culture tree plantations which are not of multiple ages, especially at the stand scale.

The forest protocols were designed not only to help achieve greenhouse gas reductions, but also to provide a range of significant public and environmental benefits including clean water, biodiversity, fish and wildlife habitat, recreation, and aesthetics. As such, forest sector emissions reductions and sequestration projects must only allow activities that promote conservation-based forest management. The newly included paragraph gives the incorrect implication that clearcutting can achieve these goals, while severely mischaracterizing and omitting the regulatory requirements.

In fact, clearcutting has, on numerous occasions, come under sharp criticism for not meeting ecological goals for forest ecosystems. A review by Franklin et al. (1997) concluded that "research has [] made clear the dramatic impacts that clearcutting and other management activities can have on biological diversity and ecosystem function." That is because clearcutting

fails to retain the high levels of structural, functional and compositional diversity necessary to a healthy forest. Scientists studying forest systems have found that natural patterns of diversity “contrast sharply with low levels of biological legacies associated with even-aged regeneration harvest practices, particularly clearcutting” (Franklin et al. 1997).

New concepts of forest management aimed at increasing the stand and landscape level diversity include extending the length of rotation and retaining additional structure at the time of harvest. The rotation ages for private forest land in California typically range from 50 to 80 years (O’Hara 2004). Franklin et al. (1997) recommend increasing rotation length by *50 to 300 percent* to allow the development of structural complexity associated with large old trees, snags, and down wood. O’Hara (2004) found that “if longer rotations were widely adopted in the Sierra Nevada, this would lead to major changes in the distribution of stand structures over broad scales and an increase in the number of stands containing old forest features.”

Retaining additional structure at the time of harvest is another means to increase diversity. Variable retention practices, wherein clumps of trees or scattered trees are retained throughout a clearcut, have been proposed to maintain or increase forest diversity for future stands (Franklin et al. 1997). Sierra Pacific Industries (“SPI”) engages in a practice of retaining scattered or clumped trees within some clearcuts. Their practice, however, falls short of the requirements for variable retention under the Forest Practice Rules and as such is recognized only as an alternative to clearcutting. Recent work by Aubry et al. (2009) indicates that higher levels of retention (40%) and larger retained areas (2.5 acres) better meet important ecological conditions compared to lower retention levels (15%). They recommended a general strategy for the persistence of the vast majority of forest dependent species that includes a combination of aggregates >1 ha in size and retention at levels considerably greater than current standards.

Lindenmayer and Franklin (2002) likewise identify that practices such as clearcutting do not mimic natural forest events such as fire. For example, fire leaves varying degrees or traces of the original stand in the form of biological legacies. Biological legacies are organisms, organically derived structures, and organically produced patterns that persist from the predisturbance ecosystem, and they include logs, intact thickets of understory vegetation, large living trees, and snags. As summarized in Lindenmayer and Franklin (2002), fire leaves abundant snags, logs are common, soil disturbance is low, understory plants are common, and fire results in a pulse of nitrogen and phosphorus release. Lindenmayer and Franklin (2002) found that clearcuts are very much *unlike* most natural disturbances including fire.

From a carbon perspective, as explained in a letter from Oregon State University Forestry professor Mark Harmon to the California Air Resources Board regarding California Climate Action Registry Forest Protocols:

Timber harvest, clear cutting in particular, removes more carbon from the forest than any other disturbance (including fire). The result is that harvesting forests generally reduces carbon stores and results in a net release of carbon to the atmosphere.

Mackey et al (2008) likewise note that:

The remaining intact natural forests constitute a significant standing stock of carbon that should be protected from carbon-emitting land-use activities. There is substantial potential for carbon sequestration in forest areas that have been logged commercially, if allowed to re-grow undisturbed by further intensive human land-use activities.

There are important distinctions between the carbon dynamics of natural forests and industrialized forests, especially monoculture plantations. Most of the biomass carbon in natural forests is stored in the larger, older trees; however, commercial logging removes most of these trees, leaving stands with much younger average ages. As a result, logged forests have a significantly reduced (more than 40 percent) long-term average standing stock of biomass carbon compared with an unlogged forest. Moreover, as pointed out in Noss (2001):

Intensification of forestry activities is often promoted on the basis that young, actively growing trees will sequester carbon more rapidly than old-growth forests in which respiration may equal or even exceed photosynthesis (Birdsey 1992). Replacement of old forests with plantations is a “perverse incentive” of the Kyoto Protocol (Brown 1998; Dudley 1998). Simplistic carbon accounting, encouraged by the protocol, ignores the tremendous releases of carbon that occur when forests are disturbed by logging and related activities such as site preparation and vegetation management (Perry 1994; Schulze et al. 2000). It ignores the fate of woody debris and soil organic carbon during forest conversion (Cooper 1983; German Advisory Council on Global Change 1998). Typically, respiration from the decomposition of dead biomass in logged forests exceeds net primary production of the regrowth (Schulze et al. 2000). Considerable time is required - often hundreds of years - for regenerating forests to accumulate the carbon stocks characteristic of primary forests (Harmon et al. 1990). Over several rotations of growth and harvest, the mean carbon pool of intensively managed forests is only about 30% that of primary forests (Cooper 1983). From the standpoint of maintaining biodiversity during climate change, conversion of natural forests to plantations cannot be justified. Tree plantations around the world, especially exotic monocultures, have less biodiversity than natural forests in the same regions (Hunter 1990; Noss & Cooperrider 1994; Perry 1994). Plantations are often markedly less resistant to disturbances such as fire and more subject to pest outbreaks than natural forests (Schowalter 1989; Perry 1994). Pest outbreaks could increase in severity or change in distribution with changing climate (Williams & Liebhold 1995), amplifying the vulnerability of plantations.

Noss (2001) also notes that clearcutting causes significant habitat fragmentation which has climate impacts of its own:

Fragmentation may threaten biodiversity during climate change through several mechanisms, most notably edge effects and isolation of habitat patches. Intact forests maintain a microclimate that is often appreciably different from that in large openings. When a forest is fragmented by logging or other disturbance, sunlight and wind penetrate from forest edges and create strong microclimatic gradients up to several hundred meters wide, although they may vary in severity and depth among regions and forest types



(Ranney et al. 1981; Franklin & Forman 1987; Chen & Franklin 1990; Laurance 1991, 2000; Chen et al. 1992; Baker & Dillon 2000). With progressive fragmentation of a landscape, the ratio of edge to interior habitat increases, until the inertia characteristic of mature forests is broken. Fragmented forests will likely demonstrate less resistance and resilience to climate change than intact forests. Another potentially serious impact of fragmentation is its likely effect on species migration. By increasing the isolation of habitats, fragmentation is expected to interfere with the ability of species to track shifting climatic conditions over space and time. Weedy species, including many exotics, with high dispersal capacities may prosper under such conditions, whereas species with poor mobility or sensitive to dispersal barriers will fare poorly.

SPI recently publicized a white paper titled: “Carbon Sequestration in Californian Forests: Two Case Studies in Managed Watersheds.” The SPI paper concludes that the Intensive Scenario – in which existing forests are replaced by even aged monocultures, thereby converting them into forest plantations – results in an increase in sequestered carbon of 75 to 95 tons C/acre over 100 years compared to minimum compliance with Option C of the California Forest Practice Rules. (Option C of the CA Forest Practice Rules serves as the baseline for forest projects under the California Air Resources Board’s forest protocols.)

Two reviews of the SPI study conducted by experts on science, climate, and logging found the study to lack credibility. Dr. Olga Krankina (2008), a professor and researcher of forest climate impacts at Oregon State University, notes that “The approach adopted in the report includes several assumptions that bias the results in favor of intensive management.” Peter Miller (2008), a senior scientist with the National Resources Defense Council, highlights a similar shortcoming in the interpretation and presentation of the results as related to the timeframe of the study:

The SPI analysis only provides a comparison of the sequestered carbon at the end of the 100-year study timeframe. However, the relevant comparison for climate policy is the average amount of sequestered carbon over the life of the project. Because the transition to the Intensive management approach initially results in a decrease in total carbon sequestered, it shows a net decrease in carbon sequestration relative to custodial management for the first 40 years of the analysis. (p. 40) Even under the favorable assumptions of this analysis, Intensive management does not result in an increase in average sequestration relative to custodial management for over 50 years. Overall, the average differences between the scenarios are much smaller than the reported differences at the end of the timeframe.

The SPI study raises numerous methodological and policy issues that call into question both the quantitative conclusions and the value of those conclusions for the development of climate policy. A critical review of this study demonstrates that, contrary to the report’s conclusions, replacing existing diverse forests with uniform tree plantations is unlikely to produce significant carbon benefits and will instead increase the risk of catastrophic fire and threaten the extensive range of benefits provided by existing forest ecosystems.

In short, reviews of the SPI paper show that the overall conclusion drawn by SPI, that the Intensive Scenario is the best in terms of carbon sequestration, is inconsistent with the actual results of their calculations. In fact, their calculations show the opposite:

While the press release and the text of the report emphasize the advantages of intensive management scenario, the calculation results indicate that within the first 40-60 years of future projections the “custodial management” scenario leads to greater carbon storage than the intensive management scenario. Thus the conclusions of the report are not fully consistent with the results of calculations. This inconsistency is significant because the effects of carbon removal from the atmosphere are critical within the next decades and the time horizon of policy decisions tends to be even shorter (Krankina 2008).

Inclusion of soil carbon losses and process emissions, adoption of a more realistic wood product lifetime, proper accounting of harvest residues, and use of either one of the other LBM models would result in a dramatic reduction in the estimated climate benefits of Intensive management (Miller 2008).

While clearcut logging practices are currently lawful under California’s existing forest practice rules, allowing them as an acceptable method of sequestering CO<sub>2</sub> would be harmful to California’s water and wildlife and would be inconsistent with the definition of Natural Forest Management. The most appropriate outcome, therefore, is to eliminate the insertion regarding even-aged management. This is especially true given that the insertion 1) fails to make explicit that clearcutting, especially clearcutting that prevents the development of significant old growth (i.e. short to mid length rotation clearcutting), is not allowed, 2) allows a blanket 40 acre and 5 feet/5 year rule, and c) does not make plain that carbon storage is the highest priority (i.e., because young forests do not store more carbon than old forests, unevenaged management practices, which promote old growth, should be highly encouraged over clearcutting, which creates young forests)

For all these reasons, we are opposed to the Climate Action Reserve adopting the proposed Forest Project Protocols unless the paragraph on even-age management is removed.

Thank you for your consideration of these comments. Please contact us if you have any questions.

Sincerely,



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