NAFO | National Alliance of Forest Owners
Investing in the Future of America's Forests

February 28, 2011

National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460

RE: Docket No. EPA-HQ-ORD-2010-1077: Draft Report, Biofuels and the Environment: First Triennial Report to Congress, 76 Fed. Reg. 5154 (January 28, 2011)

The National Alliance of Forest Owners (NAFO) provides these comments on the Environmental Protection Agency's (EPA) "Draft Report, Biofuels and the Environment: First Triennial Report top Congress," Docket No. EPA-HQ-ORD-2010-1077, 76 Fed. Reg. 5154 (January 28, 2011).

NAFO's mission is to protect and enhance the economic and environmental values of private forests through targeted policy advocacy at the national level. At the time of this submission, NAFO's members represent 75 million acres of private forests in 47 states. NAFO was incorporated in March 2008 and has been working aggressively since to sustain the ecological, economic, and social values of forests and to assure an abundance of healthy and productive forest resources for present and future generations. NAFO and its members share EPA's focus on healthy watersheds and sustainable communities, a key part of which includes maintaining the balance between productive and economic land use activities and the application of appropriate conservation methods.

In general, NAFO finds the draft report well organized and carefully written. The authors have provided useful overviews of relevant studies on a wide range of topics that is easily followed. However, given the breadth of the report, not every topic receives comprehensive consideration. We therefore offer the following comments on Section 3.4 *Woody Biomass*.

1. The forestry community has developed a comprehensive framework for protecting water quality in the state-developed forestry best management practices, which have a high rate of implementation and which are effective at protecting water quality.

The widespread adoption of BMPs to control silvicultural nonpoint source activities represents one of the great successes of the Clean Water Act and state and designated control agency programs. Forestry activities in the United States are now conducted under the most comprehensive program of best management practices (BMPs) of any land use activity. Since the enactment of the Federal Water Pollution Control Act Amendments of 1972, all states with significant forest management activities have developed either regulatory or non-regulatory BMP programs under Sections 208, 319, and 404 to achieve water quality goals. We would direct you, for example, to the Florida BMPs (116 pages) (TAC 2008) and the Minnesota management guidelines (hundreds of pages addressing a range of forest management practices, including a 49 page section on forest roads) (MFRC 2004, 2007update).

NCASI (2009) found that forestry BMPs throughout North America are based on a common set of science-based principles. Variation in BMPs among jurisdictions is attributable to efforts by states and provinces to apply general principles to their own circumstances. For example, Oregon's BMPs include guidance for constructing roads in landslide-prone areas that is not relevant in Florida and other states that do not have landslide-prone terrain. Two elements are required for effective nonpoint source control programs: high rates of BMP implementation and effective BMPs that minimize negative management impacts.

The content and use of BMPs are subject to both periodic review and continuous improvement. For example, BMPs have been employed in southern states for the past 30 years. Rates of implementation have been systematically measured and regularly reported by all13 southern states. In addition, the Southern Group of State Foresters established a peer review process of member states' BMP programs to maximize consistency and quality. All 13 states have been reviewed during the past five years; most a second time. All have been responsive to the recommendations of the peer review teams.

Studies have shown that nationally, the overall BMP implementation rate is 89%, and has been increasing steadily (Ice et al. 2010). There are literally hundreds of paired watershed studies and other controlled experiments that have tested or are testing the effectiveness of contemporary forest practices and BMPs (Ice 2004, Ice and Stednick 2004, Ice et al. 2007). Some of these, such the Piedmont Watershed Studies (Williams et al. 2000), the Alto Watershed Study in East Texas (McBroom et al. 2008), and the Alsea Watershed Study and Watersheds Research Cooperative in Oregon (OFRI 2009), have measured or are measuring improvements in water quality from managed forests for contemporary practices compared to historic impacts. Unfortunately, programs such as the US Geological Survey's National Water Quality Assessment Program (NAWQA) tend to minimize water quality sample collection in forest systems because they generally show less impact than other land uses. As a result, there is a need for additional large-scale data characterizing water quality improvements over state or large watershed areas. Some additional citations addressing the effectiveness of forestry BMPs include: (Shepard et al. 2004, Ice 2005a, Ice 2005b, Olszewski and Jackson 2006).

The forestry community continues to invest in research to measure and test the effectiveness of contemporary forest practices. An excellent example is the ongoing Watersheds Research Cooperative in Oregon where three separate paired-watershed studies are testing the effectiveness of the Oregon Forest Practices Act rules (See http://watershedsresearch.org/).

Although most data on trends in water quality for forest watersheds are from small-scale experiments, there is sufficient monitoring data at larger scales to confirm that water quality in forested watersheds is generally high whether the forests are managed intensively or left untouched (Binkley and Brown 1993). For example, the 2002 National Water Quality Inventory attributes only 5% of impaired river miles to silviculture. This suggests that that if all watersheds were in the forestry land-use category there would be an 85% reduction in impaired river miles.

Review of BMPs should also recognize that short-term impacts to water quality from a particular forest management activity are typically transient in nature and will not prevent attainment of water quality standards in a "reasonable period of time." Sustainable forest management, which involves growing and harvesting long-lived perennial species, does not adversely affect the long-term condition of water quality or the watershed. There may be short-term transient impacts from forest management but water quality from managed forests using appropriate BMPs is high, especially when viewed over the life cycle of the particular forest stand. Some water quality impacts may also result from active management to achieve desired conditions, such as large conifers in the riparian zone, and these transient impacts that support long-term improvements in watershed conditions should also be recognized as not preventing attainment of water quality standards in a "reasonable period of time." This is especially relevant to the discussion about strengthening antidegradation standards. Forests are managed over rotations or cutting cycles and there may be periodic disturbances. The patterns need to be recognized to promote the retention of the land in forest use rather than conversion to alternative, less desirable land uses. Disturbance is essential to the long-term conditions of forest watershed and stream systems. Forest BMPs are often designed to create conditions that promote favorable responses to disturbance events by allowing for recruitment of large wood, maintaining stable channels, or other aquatic functions.

An important point when addressing water quality and forestry is differentiating between current practices and legacy conditions. All land use activities have some legacy conditions. A prominent forestry legacy issue is forest roads. Roads were often located near streams or built using methods no longer considered sensitive to environmental concerns. Direct drainage of road runoff to streams is one example. In recent years, there has been a concerted effort to disconnect roads from streams and to provide for dispersal of runoff and settling of sediment (e.g. Dubè et al. 2010). The opportunity to address legacy road conditions is increased with active management and economic vitality.

Specific Comments on the Report:

- In the Executive Summary, the authors recommend "Improving the ability of federal agencies (within their existing authorities) to develop and implement best management and conservation practices and policies that will avoid or mitigate negative environmental effects from biofuel production and use." This conclusory statement is not supported in the report, which does note several studies finding BMPs to be effective, and demonstrates considerable unfamiliarity with the numerous studies discussed above. Moreover, effective development and implementation of BMPs and other conservation practices depends on coordination of efforts among diverse stakeholders including landowners, state agencies, and research organizations as well as federal agencies.

- The discussion of water quality in 3.4.2, while discussing the effectiveness of BMPs overall, does not really indicate an understanding of state BMP programs. The report cites one Forest Service report, with the offhand note that "many states failed to respond to a request for data." The Forest Service report is only one source of information. Useful and comprehensive discussions of these programs can be found in NCASI 2009 and Phillips 2004. Also, the National Association of State Foresters maintains useful BMP information on its website www.stateforestsers.org.

- The first paragraph of 3.4.6.1 discusses potential negative impacts of tree harvesting on aquatic ecosystems. This discussion could be improved by noting the well-documented effectiveness of Best Management Practices in mitigating such impacts. For example, specific BMPs are designed to address streamside management to avoid the very impacts noted in this section of the report.

2. Soil Nutrients

The first paragraph of 3.4.4.3 asserts that "Harvesting with residue removal generally leads to declines in soil nutrients and forest productivity." As worded, this assertion is over-generalized and therefore incorrect. A more accurate assertion would be "Harvesting with residue removal can lead to declines in soil nutrients that may have adverse effects on forest productivity (e.g., McLaughlin and Phillips, 2006; Thiffault et al., 2006). However, one of the most comprehensive studies focusing on this topic, the North American Long-Term Soil Productivity (LTSP) experiment, found no adverse effects on forest productivity of extreme experimental treatments that removed virtually all surface organic matter. The LTSP experiment showed that even whole-tree harvesting with forest floor removal had no effect on productivity over 10 years across 26 study installations and a range of forest types (Powers et al., 2005). Operational residue harvesting is typically much less intensive than these experimental treatments and is not expected to have adverse near-term impacts on productivity in many circumstances." The LTSP experiment and related studies have also shown that the presence or absence of competing vegetation is more important than the intensity of biomass removal in governing subsequent forest productivity (Powers et al. 2005; Sanchez et al., 2006; Ares et al., 2007).

3. Carbon Sequestration

The report expresses concern about decreased sequestration for several of the crops discussed. Furthermore, in the context of woody biomass, EPA suggests that increasing biomass prices will increase harvesting, which may imply a decrease in sequestration (see Section 3.4.1.1.). Since it is important to understand that increase harvesting does NOT necessarily result in decreased carbon sequestration or land-cover, we thought it would be helpful to include a discussion of carbon sequestration in U.S. forests.

The process of sequestration and storage is a natural by-product of tree growth. Through photosynthesis, trees remove, or sequester, carbon from the atmosphere, and store it in their biomass. That carbon remains stored even if the tree is used to make much needed wood products, such as homes or furniture. The amount of atmospheric carbon transformed into forest biomass has been estimated at 25 to 30 billion metric tons per year.[1]

Through sequestration, forests in the United States, nearly 60 percent of which are privately owned,[2] serve as the most significant natural terrestrial sink of greenhouse gases. U.S forests capture about 10%-15% of annual U.S. greenhouse gas emissions through photosynthesis and store it in the forest and in wood products.[3] Notably, private forests in the United States, which supply over 90% of the wood used by the industry, are also a net sink; carbon stocks on private forests are growing at a rate equivalent to removing 131 million metric tons of CO_2 from the atmosphere per year.[4] EPA's most recent Inventory of U.S. Greenhouse Gas Emissions and Sinks found that changes in carbon stocks in U.S. forests and harvested wood were estimated to account for net sequestration of 792 million metric tons of carbon dioxide equivalents in 2008. EPA 2010 Inventory, *supra* at n. 2, at 7-13.

EPA explained that "improved forest management practices, the regeneration of previously cleared forest areas, and timber harvesting and use have resulted in net uptake (i.e., net sequestration) of [carbon] each year from 1990 through 2008." *Id.* In fact, the 2010 Inventory shows that "[n]et CO_2 flux from Land Use, Land-Use Change, and Forestry increased by 30.9 Tg CO_2 Eq. (3 percent) from 1990 through 2008. This increase was primarily due to an increase in the rate of net carbon accumulation in

[1] Field, C.B., *Primary production for the biosphere: integrating terrestrial and oceanic components,* Science, 281: 237 (1998); Sabine, C.L., Heimann, M., Artaxo, P., Bakker, D.C.E., Chen, C.T.A., Field, C.B., Gruber, N., Le Quéré, C., Prinn, R., Richey, J.E., Lankao, P.R., Sathaye, J.A. and Valentini, R., *Current status and past trends of the carbon cycle*, In C.B. Field & M.R. Raupach, The global carbon cycle: integrating humans, climate, and the natural world, at 17–44, Washington, DC, USA, Island Press (2004).

[2] *See* Society of American Foresters, *The State of America's Forests* at 9 (2007), *available at* http://www.sfpa.org/Environmental/StateOfAmericasForests.pdf. "The largest carbon sink in North America (270 Mt C per year) is associated with forests." U.S. Climate Change Science Program and the Subcommittee on Global Change Research, National Oceanic and Atmospheric Administration, *The First State of the Carbon Cycle Report (SOCCR): The North American Carbon Budget and Implications for the Global Carbon Cycle* (King, A.W., L. Dilling, G.P. Zimmerman, D.M. Fairman, R.A. Houghton, G. Marland, A.Z. Rose, and T.J. Wilbanks (eds.) 2007).

[3] Carbon sequestration in forests, trees in urban areas, agricultural soils, and landfilled yard trimmings and food scraps, offset 14.9 percent of total emissions in 2007 and 13.5 percent of total emissions in 2008. *See* U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007 at ES-4 (Apr. 15, 2009) (EPA 2009 Inventory), *available at* http://www.epa.gov/climatechange/emissions/downloads09/GHG2007entire_report-508.pdf; EPA 2010 Inventory at ES-6, 7-13.

[4] *See* Haynes, R. W., *The 2005 RPA timber assessment update*, Gen. Tech. Rep. PNW-GTR-699, USDA Forest Service, Pacific Northwest Research Station (2007); Heath, L. V., *Greenhouse Gas and Carbon Profile of the U.S. Forest Products Industry Value Chain*, Environmental Science and Technology (2010).

forest carbon stocks, particularly in aboveground and belowground tree biomass, and harvested wood pools." *Id.* at ES-9; *see also id.* at Figure 7-3 (enclosed as Attachment 2). In addition, "[b]ecause most of the timber harvested from U.S. forests is used in wood products, and many discarded wood products are disposed of in [solid waste disposal sites] rather than by incineration, significant quantities of [carbon] in harvested wood are transferred to long-term storage pools rather than being released rapidly to the atmosphere." *Id.* at ES-9, *see also id.* at E-12 to E-13. EPA estimates and research on private forestlands have demonstrated the benefits of storing carbon in forest products.[5] Work by the Consortium for Research on Renewable Industrial Materials has also documented how managed forests can produce sustained, overall net GHG emission reductions when carbon is stored in enduring harvested wood products and/or when harvested wood products are substituted for products with higher energy/carbon footprints.[6] As explained below, EPA research and other studies have recognized that the use of biomass as an energy source can reduce overall GHG emissions.

Sequestration also comes from net forest growth*.* EPA found that "on average the volume of annual net growth nationwide is about 32 percent higher than the volume of annual removals." EPA 2010 Inventory, *supra* at n. 2, at 7-13.

The situation in the United States is thus clear. As demonstrated by the Forest Inventory and Analysis (FIA) Program of the U.S. Forest Service, *see generally* http://fia.fs.fed.us/, carbon stocks in U.S. forests continue to grow, meaning that the flux of CO_2 into forest biomass is greater than the flux returning to the atmosphere due to respiration, decay and combustion. Moreover, the sustainability of current harvest and regeneration practices can be demonstrated using data from the USDA's 2007 report on "Forest Resources of the United States" (Smith 2007).[7] It is clear from Figures 1 and 2, below, that forested area, including the subset of forest that is classified as timberland, has been stable or growing slightly. Removals of wood from U.S. forests have also remained relatively stable since 1980 (see Figure 3.). Even in the South, which has experienced an increase in removals since 1980, the ratio of growth to removals was above 1.3 in 2006 (see Figure 4).

[5] *See* NAFO, Carbon Mitigation Benefits of Working Forests, *available at* http://nafoalliance.org/mitigation-benefits-working-forests/.

[6] *See, e.g.,* Lippke, B., et al., CORRIM: Life-Cycle Environmental Performance of Renewable Building Materials, 54 Forest Prod. J. 8 (2004).

[7] Smith, W., P. Miles, C. Perry, S. Pugh, *Forest Resources of the United States, 2007 - General Technical Report WO-78*, U.S. Department of Agriculture, Forest Service (2007).

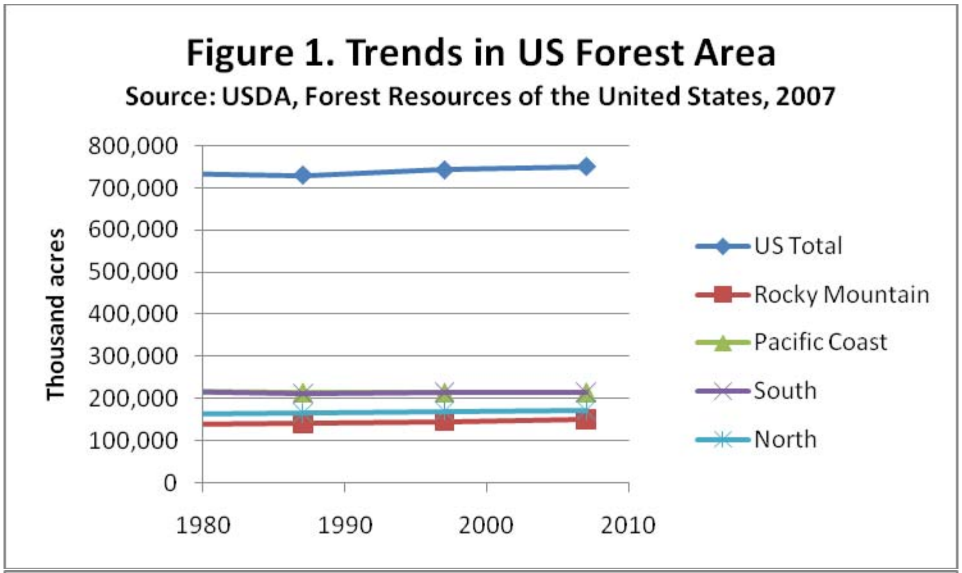


Figure 1. Trends in US Forest Area
Source: USDA, Forest Resources of the United States, 2007
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Thousand acres
1980
1990
2000
2010
US Total
Rocky Mountain
Pacific Coast
South
North

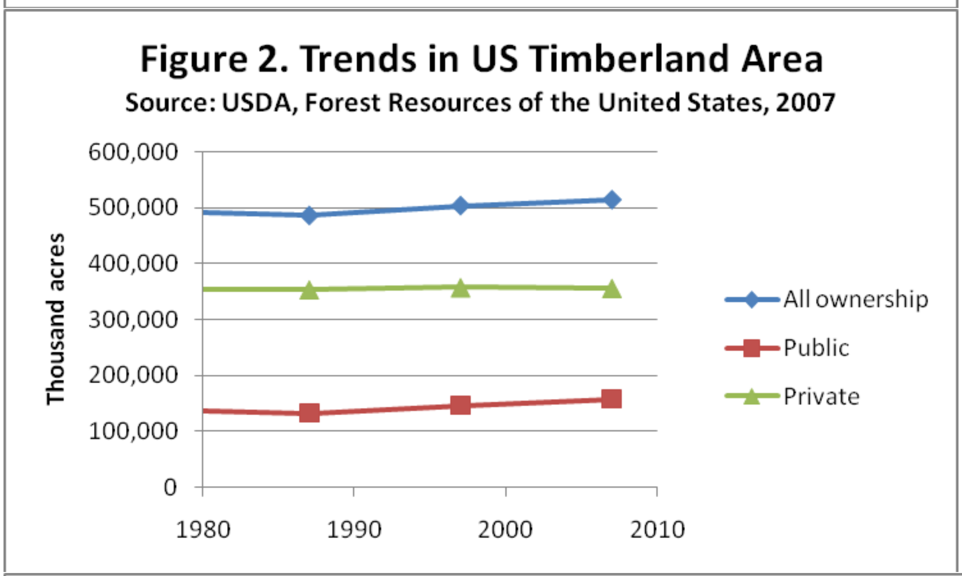


Figure 2. Trends in US Timberland Area
Source: USDA, Forest Resources of the United States, 2007
600,000
500,000
400,000
300,000
200,000
100,000
0
Thousand acres
1980
1990
2000
2010
All ownership
Public
Private

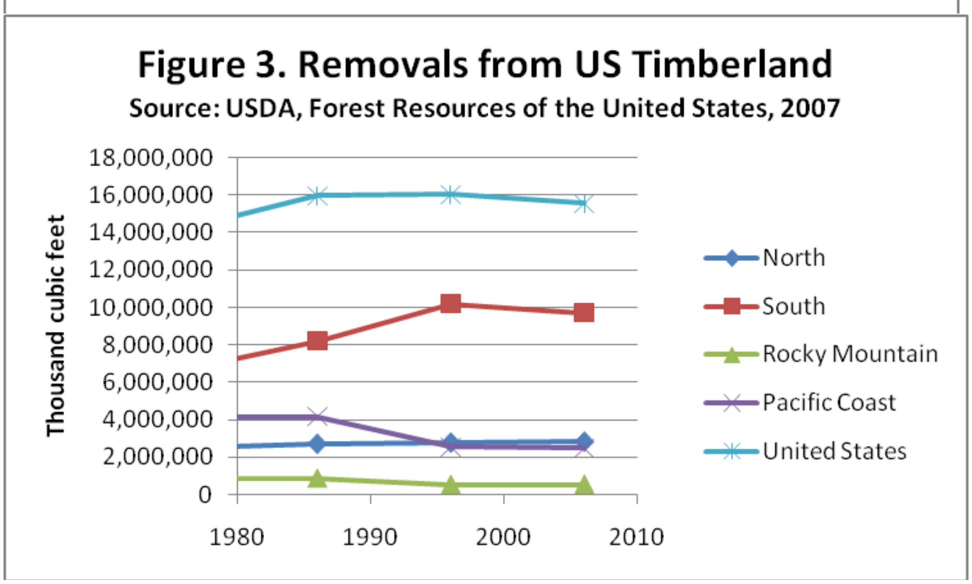
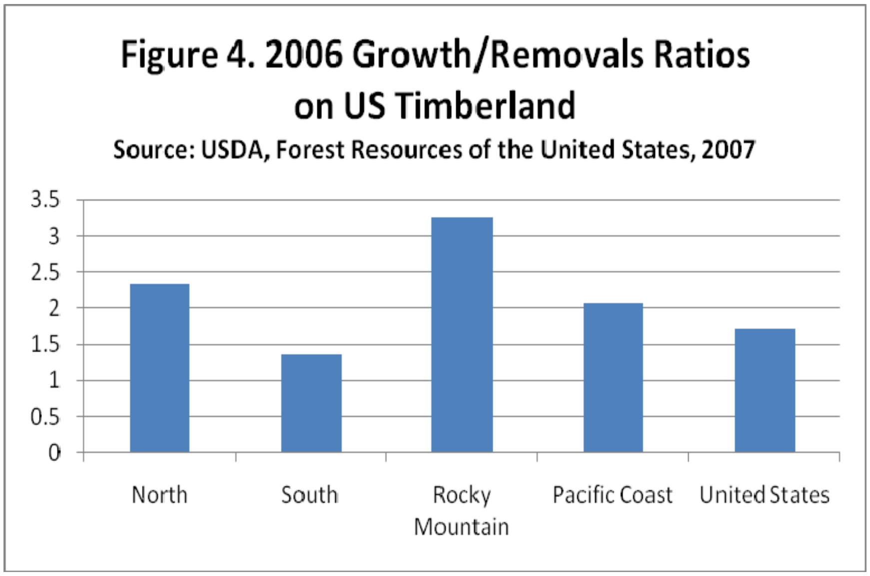


Figure 3. Removals from US Timberland
Source: USDA, Forest Resources of the United States, 2007
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
Thousand cubic feet
1980
1990
2000
2010
North
South
Rocky Mountain
Pacific Coast
United States



For these reasons, as EPA is aware, carbon stocks in United States forests have been, and continue to, increase. EPA 2010 Inventory, *supra* at n. 2. Thus, the generation of bioenergy from forest biomass is truly carbon neutral.

4. References

We have included below a partial list of the many papers available which study impacts on water quality from forest management activities. We can provide copies if otherwise inaccessible.

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Thank you for the opportunity to comment on the draft report.

Sincerely,

David P. Tenny
President and CEO