



## **Roads in Managed Forests**

A position of the Society of American Foresters

*Originally adopted on February 20, 1998, revised and renewed in December 2014, and again December 2020. This position will expire 2025, unless, after subsequent review, it is further extended by the SAF Board of Directors.*

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### **Purpose**

To address the important role forest roads play in accessing public and private managed forestlands and providing appropriate safeguards to mitigate impacts.

### **Scope**

Permanent and temporary roads used to access public and private forestlands for management purposes.

### **Position**

The Society of American Foresters (SAF) believes forest roads are essential infrastructure that provide crucial access for sustainably managing our nation's forestlands with their many critical environmental, economic, and societal benefits. Timber harvesting, prescribed burning, wildfire control, recreational access, and habitat and watershed improvement all require regular access on well-constructed and maintained road systems. SAF supports policies and programs that help fund construction, reconstruction, and maintenance of these essential forest roads.

There are widely developed and accepted best management practices (BMPs) to guide forestry professionals in constructing, maintaining, stabilizing, and retiring forest roads depending on the intended use and expected traffic. SAF supports and promotes the implementation, education, and monitoring of BMPs as the best method to manage forest roads.

SAF recognizes that some roadless areas on forestlands may have special qualities that deserve protection, such as providing for remote recreation or protecting rare plant or animal communities. These areas can manifest forest health problems, and access may be needed to control insect and disease outbreaks or to reduce hazardous fuels that foster stand-replacing wildfire threatening human communities, watersheds, and wildlife habitat. In these instances,

SAF favors access that maintains the roadless character of the area consistent with forest management plans and proper stakeholder input.

## **Issue**

The impacts of forest roads on water quality, fish, invasive species, and terrestrial and riparian habitats have been widely studied, along with the methods for mitigating those effects. Roads are critical for access and achieving land management objectives; however, if roads are not located, constructed, and maintained properly, then sedimentation and other damage to terrestrial and riparian habitat can result. Roads that follow proper design criteria mitigate impacts to other resources. Proper management of a road or network of roads requires significant investment over time in order for those roads to meet BMP standards. This is done by public investment on public lands and by landowners (sometimes with public funding) on private lands. BMP implementation, along with ongoing monitoring and research, can effectively limit surface erosion and mass soil movement and provide for safe storm flows, fish passage through culverts, and other environmental benefits.

Properly maintaining a vital forest road infrastructure to BMP standards has gradually become more challenging for multiple reasons, such as increased road usage, increased labor and equipment costs, and in many locations, notably USDA Forest Service lands, from a decrease in timber sale revenues which once funded maintenance. The funding model of forest road construction and maintenance, largely through receipts from commodity timber sales, is less dependable. Increased support from other funding sources is critical to keeping permanent forest roads appropriately maintained on federal, state, and private lands. The utilization of temporary roads as a means to effectively access and remove timber, can also eliminate the maintenance requirements and costs associated with leaving permanent roads in place. However, temporary road location and construction still must conform to BMP guidelines to avoid environmental degradation.

## **Background**

### ***Road Planning and Maintenance***

Forest roads in the US consist of a vast network on private and public lands. National Forest roads alone include 380,000 miles, more than double the amount of the US National Highway System (USDA Forest Service, 2002). Forest roads are utilized for multiple purposes: harvesting timber, firefighting, recreation, research, search and rescue, law enforcement, and as links between non-forest roads. Some are permanent and others are temporary. For harvesting timber, short-term uses include skid-roads, truck roads, and landings for loading trucks. New permanent road construction is rarely a component of road planning due to the high cost of meeting current road standards, and temporary road construction has become the most common avenue in accessing managed forests. Temporary roads are created to access and remove timber during harvesting operations and then are closed through a combination of tactics including obliteration, re-contouring, blocking, and/or reseeding in order to restrict further use and limit environmental impact.

### *Road Funding on Public Lands*

A broadening of natural resource concerns on federal forests and limited budgets for road maintenance have required federal managers to assess existing road systems to determine if older roads are compatible with current resource goals, legal mandates, and budgets. This has resulted in decisions to decommission roads or restrict motor vehicle access which sometimes cause objections among the public and the firefighting community that use forest roads for access. Closed or decommissioned roads often need restoration to protect soil and water quality. The availability of appropriated funding for this work is not adequate. Combining appropriated funds with other forest restoration projects that generate revenue increases the opportunity to fund road management. Land managers should look at new and innovative solutions to address long-term road maintenance, decommissioning, and removal of forest roads that cannot be maintained. Appropriate methods to limiting environmental impacts from forest roads include utilizing temporary roads more frequently, recreational user group maintenance agreements, stewardship contracting, and/or seasonally controlling public access.

### *Environmental Concerns*

Road construction was identified for its adverse environmental impacts beginning in the 1970s, particularly on water quality. The Clean Water Act amendments of 1972 identified forest roads as a nonpoint source of pollution, and increased attention at both the federal and nonfederal levels on road construction and maintenance practices. During the 1970s, some states (e.g., California, Oregon, and Washington) enacted state forest practice laws with specific road construction and maintenance requirements. Other states, with technical and financial assistance from the federal government, began developing forest road BMPs for private, state, and federal forestlands (see SAF Forest Water Resources Position Statement, 2020). By the 1990s, states in the South developed BMPs designed to improve water quality associated with silvicultural activities, including an emphasis on reducing sediment related to forest roads (Wear and Gries, 2002).

### *Best Management Practices*

BMPs for forest roads are designed to manage a broad spectrum of impacts, the most important of which are sediment flow and soil erosion, while providing essential access to managed forestlands. BMPs provide specific guidance and methods on how to design features that effectively limit surface erosion and mass soil failures, provide direction for safe storm flows, fish passages through culverts, and other critical environmental safeguards. Although the 1972 Clean Water Act amendments were challenged by the Supreme Court (*Decker v. Northwest Environmental Defense Center*, 2013), the court ruled in favor of the existing legal structure, and BMPs continue as the driving force behind forest road management.

BMP effectiveness results from their specificity to the broad spectrum of conditions found on all forestlands, including federal lands. Further, they are designed to address conditions through a tiered approach that creates a near guarantee of success. BMPs consist of a mix of regulatory and non-regulatory approaches, both of which are designed for the specific hydrologic and

physiographic characteristics of the respective landscape. The presence of regulations does not result in higher implementation rates of BMPs (Ice et al., 2010). More important variables in determining BMP implementation include timber for sale passing through a supply chain involving forest certification, outreach from government and private entities, presence of a forester, and a consistent culture of implementation. Documented compliance rates are 92 percent nationwide (NASF, 2019), inclusive of states with voluntary programs.

Voluntary BMPs have an additional benefit of having lower administrative costs. BMPs are state- and site-specific, allowing each state to most appropriately address its unique geomorphological attributes. In addition, proper road construction and maintenance practices on forestlands are mandated by forest certification programs such as the Sustainable Forestry Initiative (Wallinger, 2003), the American Tree Farm System (2020), and the Forest Stewardship Council (Washburn and Miller, 2003) for landowners certified to those standards.

Overall, BMP studies on efficacy in different states for roads with varying characteristics (e.g., slope, straightness, underlying geology, size of watershed) show a very high level of effectiveness (Decker v. Northwest Environmental Defense Center, 2013). For example, a study of the Chattahoochee National Forest in Georgia showed that roads reconstructed with BMPs lowered sediment yields by 70 percent (Riedel and Vose, 2003). Along the Atlantic Coastal Plain in Virginia, Wynn et al. 2000 found total suspended solids rose eight times following clearcutting on forested watersheds lacking BMPs vs. negligible in areas with BMP implementation.

### *Roadless Areas*

Roads are excluded from some areas because of law, policies, or landowner management plans and objectives. According to the USDA Forest Service, inventoried roadless areas are defined as government reviewed lands without existing roads that could be suitable for roadless area conservation as wilderness or other non-standard protections (USDA Forest Service, 2000). As long as inventoried areas are accurate and preclude roads, land management objectives lean toward limiting road construction, specifically for commercial harvest use. This type of land management focuses on providing balance to other resource objectives for an entire forested area. Private lands may also have areas that are managed under similar objectives. However, unmanaged roadless areas can manifest forest health problems such as insect and disease epidemics or uncharacteristic wildland fires due to limited access. Adjacent, actively managed forestlands that contain roads may become a greater asset in mitigating large-scale forest threats within these roadless areas.

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