

**RESTORING FOREST HEALTH AND AVOIDING
CATASTROPHIC FIRE ON FEDERAL LANDS**

ROBERT H. NELSON

TESTIMONY TO THE TASK FORCE ON NATURAL RESOURCES AND THE
ENVIRONMENT, HOUSE BUDGET COMMITTEE, SEPTEMBER 13, 2000

My name is Robert H. Nelson. I am a Professor of Environmental Policy at the School of Public Affairs of the University of Maryland and a Senior Fellow of the Competitive Enterprise Institute. From 1975 to 1993, I worked in the Office of Policy Analysis in the Department of the Interior. This office is the principal policy office serving the Secretary of the Interior. I served on assignment as the senior economist of the Commission on Fair Market Value Policy for Federal Coal Leasing (1983-1984), as research manager for the President's Commission on Privatization (1988), and as economist of the Senate Select Committee on Indian Affairs (1991). I am the author of three books on public land management, The Making of Federal Coal Policy (Duke University Press, 1983), Public Lands and Private Rights: The Failure of Scientific Management (Rowman & Littlefield, 1995) and A Burning Issue: A Case for Abolishing the U.S. Forest Service (Rowman & Littlefield, 2000). I received a Ph.D. in economics from Princeton University in 1971.

The principal conclusions of my testimony can be summarized as follows.

1. The forest fires of 2000 have shown the need to rethink basic assumptions of federal land management.
2. Actions are urgently needed to reduce excess fuel loads in order to restore the national forests and other western federal forests to a healthier and less fire-prone condition.
3. States and local communities should take the lead in developing plans for reducing fire hazards in their vicinity, including federal forests. They should work in conjunction with the federal land agencies, environmental groups, the timber industry and other elements of "civil society."
4. The Forest Service, Bureau of Land Management and other parts of the federal government should serve primarily to facilitate discussion, to provide information and other technical assistance, and to handle administrative implementation of resulting fuels reduction plans on their own lands.
5. The Forest Service should be directed to publish full forest fire risk assessments for each community in close proximity to a federal forest, giving estimates of the likelihood of various forest fire outcomes within certain specified timeframes.
6. The costs of the fuels reduction program can be limited by taking steps to facilitate the sale of commercially marketable wood and other products resulting from fuels reduction efforts. A program of thinning costing hundreds of millions of dollars at federal taxpayer expense is not needed.
7. A cost-sharing formula should be implemented whereby the federal government does share any public burdens of excess fuels reduction with participating state and local governments.

8. Prompt action to reduce excess fuels on federal forests will require limits on the existing ability of many parties to national forest decision making to exercise a unilateral veto power over future management actions.

I will address each of these six points in turn.

Rethinking Federal Land Management

Almost a century of fire suppression on the national forests and other western forests has led to a build-up of large loads of trees and wood. Suppressing fire paradoxically results in an increase in fuel loads in the future and increasing fire hazards. Since the 1970s, the extent of wildland fires in the West has been growing and these fires have been less controllable; have burned at higher temperatures; have been more likely to be crown fires; and have often occurred outside the range of previous wildland fire experience. The economic losses have included destruction of homes and other structures, soaring federal expenditures for fire fighting, loss of tourism, loss of potentially harvestable wood, and other costs. Catastrophic wildfires have also caused sterilization of the soil, excess siltation and runoff into streams, destruction of remaining large trees, loss of biodiversity and other environmental damages.

These trends culminated in the fire season of 2000. Thus far, more than 6.5 million acres (about equal to the land area of the State of Maryland) have burned, more than twice the normal amount for this time of year. At least 1,000 homes have been destroyed. Fire fighting costs to the federal government will very likely exceed \$1 billion in 2000. The State government of Montana was forced to limit recreational access to forests covering one quarter of the area of Montana. The environmental costs are more difficult to quantify but they are large and will be visible in the years to come.

Forest fire is partly an accident of the weather and other circumstances; it is also subject to human influence. A forest can be managed to be more or less susceptible to catastrophic fire. The management decisions made over many decades of the 20th century left the national forests in a tinderbox condition. Such a management failure – sustained over many decades, and including the 1990s when much too little was done to redress the dangers created by suppression in previous decades – call for a broad review of the federal forest management regime which created such unacceptable results over such a sustained period.

Early on, the general policy of fire suppression was initially resisted by many local communities but was forced on them by a Forest Service determined to implement a single vision of “correct” forest management. This reflected the ethos of “scientific management” in which the Forest Service was conceived in 1905 and the normal expectation in science that there is a one “right answer.” In the 1990s, following the more recent recognition that fuel loads had built up to very dangerous levels on the forests, there was again an attempt to formulate a single correct policy extending over the national forest system. The Forest Service determined that prescribed burning was the superior method – more “natural” -- of reducing fuel loads on the national forests. The

level of prescribed burns on the national forests rose by a factor of three or four from 1994 to 1999 (although still small relative to the overall acreage of fire prone forest). Although many communities and expert groups outside the Forest Service strongly advocated the use of mechanical thinning of the national forests as well to reduce fuel loads, very little thinning took place.

The track record of the Forest Service shows that its “scientific” determinations are often influenced by intellectual fads, political pressures and other nonscientific elements. Where the science is incomplete and the knowledge base weak, the agency has often sought to make stronger claims for scientific knowledge than were justifiable. The experience and record of forest fire management illustrate that an approach of trial and error will have to play a larger role in the future than has been the traditional Forest Service understanding of “scientific management.”

Recent theorists of “adaptive management” have called for much greater flexibility in natural resource management. It will be difficult or impossible to apply forms of adaptive management to address forest fire concerns without significant decentralization of authority and other basic changes in the institutional arrangements for Forest Service management of the national forests.

Excess Fuel Loads Must Be Reduced

Since at least the early 1990s, as shown in Figure 1, various expert groups have been warning that excess fuel levels were building up on western forests, posing the risk of widespread catastrophic fire. Such warnings have been issued by the National Commission on Wildfire Disasters (1994); the Forest Service itself (1995); the Secretaries of Agriculture and Interior (in a joint 1995 report); and the General Accounting Office (1998 and 1999). There was little response of the federal forest agencies in comparison with the magnitude of the problem. The predictions of impending catastrophic fire have been realized in the 2000 fire season -- and in 1994 and 1996 devastating fires had already raged across large areas of the West.

In February 2000 the Forest Service published the first reliable data on the extent of the forest health problems and the excess fuels buildup on the national forests. As shown below, 28 percent of the forested lands in the national forest system are rated as very unhealthy and fire prone – characterized by large numbers of smaller trees outside the historic range of variability, and representing a large fuel load buildup. In total the national forests include 169 million acres of forested land. The total area of national forest land posing the largest fire risk thus equals 47 million acres. Lands in deteriorating condition where excess fuel loads and fire risks are currently building up and pose an abnormal fire hazard cover another 60 million acres.

Not all of these fire prone lands will require fuels reduction treatment. Some are in remote areas where fire poses little danger to human habitation, the costs of forest treatments would be large and the environmental damages from forest fire would not

**Table 1 – State of Forest Health, Forested Lands in National Forest System,
by U.S. Forest Service Region**

FS Region	Healthy	Deteriorating Health	Very Unhealthy
Region 1	20%	41%	39%
Region 2	41%	43%	15%
Region 3	15%	42%	43%
Region 4	59%	34%	7%
Region 5	24%	28%	48%
Region 6	14%	47%	39%
Region 8	70%	22%	8%
Region 9	43%	26%	31%
All FS Lands	37%	35%	28%

Source: USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory, *Historical Fire Regimes by Current Condition Classes* (Missoula, Montana: February 15, 2000).

Note: “Healthy,” “Deteriorating Health,” and “Very Unhealthy” correspond to the Forest Service categories of “Class 1,” “Class 2,” and “Class 3” lands, respectively.

be too great (or fire might be beneficial). Mechanical thinning to reduce fire risks would be illegal in formally designated wilderness areas. It would be difficult to undertake thinning in roadless areas (according to Forest Service figures, more than half of the 43 million acres recently placed under a road building moratorium are unhealthy and fire prone). Prescribed burning is limited in its applicability because of the many hurdles it faces, including the risk the fire will get out of control; air pollution concerns; administrative costs; and the necessity for the right weather conditions. Prescribed burning is not feasible at all in many national forest areas because the fuel loads are already so great that any fire would soon become a large conflagration that might well spread rapidly to other forests.

There are three options for national forest lands where excessive fuel loads pose a large forest fire risk: prescribed burning, mechanical thinning, or do nothing (and simply take the chance that no fire will break out). There is not likely to be any one answer that is universally applicable across the national forest system.

Decentralize Decision Making

Basic social value choices will be involved in resolving the best management strategy to deal with existing unhealthy forests and excess fuels loads. Prescribed burning will require that nearby residents and property owners put up with smoke (and possibly attendant health hazards) and take the risk that the fire might get out of control and damage their properties or even threaten their lives. Mechanical thinning will require a willingness to cut trees on national forest lands – contrary to the positions of many vocal

environmental groups in recent years. Doing nothing may involve the fewest immediate costs but will pose the risk that the whole forest might burn in a catastrophic fire.

The science of forest treatments to reduce fuel loads and fire risks is still on an early part of the learning curve. Various studies and experiments have been conducted but there are many large technical and ecological uncertainties that remain. The scientific difficulties are compounded by the site-specific character of the problem. The same forest treatment methods in one place may yield a much different forest outcome at another location. The science of ecology at present lacks the ability to make precise predictions.

For many years the track record of the Forest Service has been to overstate the degree of scientific knowledge and then to seek to impose common answers from the national level in the service of a fictitious scientific consensus. It is time for a new approach and a new era. This will mean more decentralization of authority and less unilateral assertion of federal authority.

It will be a continuation of existing trends already seen in the 1990s. The “watershed movement” already represents an important existing effort to decentralize management in the West. In some cases it has been driven by the intermingling of state and private lands with lands of the Forest Service and other federal agencies. No one land owner is in a position to plan and manage for the interconnections among such diverse properties, requiring the development of new collaborative mechanisms. A 1996 report by the University of Colorado Law School documented the existence of 76 watershed groups that had formed to seek solutions to common problems at the local level. The Western Water Policy Review Commission in 1998 recommended the development of new governance “mechanisms that help integrate the management of river basins and watersheds across agencies, political jurisdictions, functional programs and time.”

In Southwest Colorado, the Ponderosa Pine Forest Partnership was formed in the mid 1990s to plan actions to restore forests in the area to a healthier condition and to reduce fire hazards on the national forests and adjacent state and private lands. The predominant method selected was mechanical thinning of the forests, to be followed by prescribed burning. The participants in the effort included local government, the San Juan National Forest, Fort Lewis College, the Colorado timber industry and the Colorado State Forest Service. Because of the broad participation and range of local support achieved, a mechanical thinning program was carried out on a test basis, an outcome that would probably have been impossible at the initiative of the U.S. Forest Service alone.

The effort was initiated and much of the leadership came from the Montezuma County Commission and its Federal Lands Program. Commission leaders were confronted with finding new management approaches over 250,000 acres in mixed federal and nonfederal ownership that had been harvested for timber early in the 20th century. In the absence of fire over the course of the 20th century, these lands had now evolved into fire prone forests of small diameter, stagnated, second growth ponderosa pine. The county government decided it would be necessary to involve various other groups as well in fact

finding, technical education, and discussions of fuel reduction options and the formulation of plans.

A New Federal Role: Facilitation and Administrative Assistance

The many mistakes of past federal forest management require a new federal modesty of aims and prescriptions. Instead of the controlling force (who may listen to others but in the end acts alone), a new federal role is required in which the federal government becomes merely one participant in a larger group process of decision making. Federal officials may bring certain special capacities to the table. These may include the money to fund research and other studies, knowledge of various technical forestry subjects, and the administrative instruments and capabilities to implement elements of group decisions and plans on their own lands.

Traditionally, the federal government also held the final decision making authority for national forests and other federal lands. However, in a new role the federal government will be constrained from acting in the absence of wider agreement. When many individual lives and property are at stake, and the economic and environmental future of the surrounding area depend so much on land management decisions, federal land managers should not presume to possess unique decision making capabilities. This is especially the case when the existing state of forestry and ecological science at any given time may be capable of justifying a wide range of possible options.

New instruments of cooperation and governance will be necessary for the management of federal forests. Here as well, there is no single answer. The Second Century report, the result of a collaborative study effort involving the timber industry, environmentalists and other parties, recommended in 1999 that five models be considered in reorganizing the basic framework for national forest management and decision making. All involved significant decentralization. One model involved the creation of what would amount to a public board of directors to oversee the management of individual national forests. Another model would put less emphasis on participative decision making and achieve local accountability by requiring individual national forests to charge fees and otherwise raise revenues to cover their costs. The discipline of the market would act to insure that national forest managers do in fact serve public demands. Excess fuel loads would be reduced, for example, because this action would increase long run revenues – in terms of future timber sales, recreational fee collections, hunting and fishing access charges, etc.

Community Risk Assessments

In the role of facilitator, a first key step will be for the Forest Service to provide communities throughout the West with more complete information on forest conditions and fire risks in their vicinity. A full “risk assessment” should be prepared and widely distributed for each community, giving the probability of different types of fires and damages over different time frames. This risk assessment should also relate risk projections to possible future changes in forest conditions that might result from management actions.

At Los Alamos, New Mexico, the Los Alamos National Laboratory in December 1999 identified “wildfire as the greatest threat to Los Alamos operations.” In mid April 2000, Diana Webb, the chair of the Los Alamos Ecology Group, told a small meeting of concerned citizens that "It's not a matter of if but when wildfire will again threaten the Lab, Los Alamos and surrounding areas. We can't stress this enough." Yet, this risk information was not available in a quantitative form and not widely enough disseminated to the Los Alamos community. If more citizens had known more precisely and earlier of the real large risks to their community, they might have demanded earlier and more effective action to reduce fire risks in nearby forests. The Los Alamos fire broke out on May 4, 2000, destroying 400 homes and doing other large damage.

The Congress would need to establish a schedule with tight deadlines – perhaps first drafts by next summer, final documents by the summer of 2002 – for the publication of full risk assessments for forest fire for each western community in close proximity to a federal forest. Legally fixed deadlines are desirable because the publication of such risk assessments is bound to be a sensitive and controversial matter. Without an outside forcing action, the Forest Service or other federal agency is likely to be taken up in a long internal discussion and debate, possibly delaying for many years any publication of results.

Commercial Sales of Small-Diameter Trees

Contrary to a widespread impression, the total volumes of wood on the national forests have been increasing steadily for many years – the result of fire suppression acting to build up wood loads, at the same time that levels of timber harvests have been below net growth of wood each year. The composition of the national forests, however, has shifted radically. As many larger and older trees were harvested as part of the traditional timber program, and with fire suppression, western forests have increasingly been stocked by stands of small-diameter trees. In ponderosa pine forests 100 years ago, for example, there might have been 30 to 50 large old trees each three to four feet in diameter. Today, the same forest might have 300 to 500 trees – including ponderosa pine, white fir, grand fir, and lodgepole pine, among other possibilities – packed together in dense stands, most of the trees in the range of 4 to 12 inches in diameter. It is these new conditions of densely packed stands of small-diameter trees – virtual kindling wood for fires -- that create the much greater fire hazard currently being faced.

At present, the small-diameter trees have a limited commercial market. This can be a short term situation, however. The demand for wood and paper in the United States continues to grow unabated. The national forests now contain large supplies of wood fibres that can be used to meet these needs. At the same time, large reductions in the excess fuel loads of small-diameter trees in the national forests are needed to reduce fire risks and improve forest health. It can be a win-win situation economically and environmentally. With appropriate government policies, forest health can be improved, fire risks reduced, and large supplies of wood provided for home building and other

purposes. Rural communities in the West – some depressed economically – can also receive a significant income and employment boost.

Much increased utilization of small-diameter trees can also bring in substantial revenue to the federal government. There are various suggestions being made at present for large new commitments of federal funds for a program of thinning of overstocked western forests. This large expenditure of public money is unnecessary and undesirable. There is no need to create a new large drain on federal revenue sources and national taxpayers – and a large accompanying bureaucratic apparatus -- when small diameter trees themselves have a large commercial potential. A recent study published in August 2000 in the *Journal of Forestry* found that in southwest Colorado, for example, “forest restoration projects can achieve ecological objectives and pay for themselves.”

The potential uses of small diameter trees are numerous. Various wood products -- including oriented strand board, house logs, laminated lumber, studs, excelsior products, waferboard, posts and poles, and firewood – are possible. Oriented strand board was minimally produced until the early 1980s but now supplies 11.2 billion board feet of sheet and other wood products per year, equal to 63 percent of the volume of total U.S. plywood production. The timber industry in the United States has generally been shifting in many areas towards the use of chips and particles from lower quality trees and wood – for example, making increasing use of hardwoods as a wood fibre source. Better glues and other technology make it possible to create newly strong and attractive wood products from such lower quality sources. In 1950, the total wood outputs represented 70 percent by weight of the wood inputs going into the production process. Today, because of increased utilization of all parts of trees, this figure has increased to 95 percent.

Small trees can also supply pulp for paper production. Still another important and potentially profitable use of small-diameter trees is as a source of biomass to generate electricity.

As with any new product area, it will take time to develop the technology of utilization of small-diameter trees and to find the most suitable and profitable uses. The development of new wood processing technology has been most rapid in areas such as hardwoods where much of the wood supply is on private land. In the case of the western United States the supply uncertainties and other problems of doing business with the federal government on federal forests have inhibited a similar pace of technological and industrial infrastructure development. If every computer manufacturer had had to depend on a federal “chip” supplier with the same bureaucracy and reliability as the U.S. Forest Service supplies wood “chips,” the U.S. personal computer industry would likely still be back somewhere in its infancy.

Small-diameter trees also are limited in their marketability in the West at present because there are few contractors with the best harvesting equipment for these trees and few local mills with the capacity to handle them. The small-diameter trees thus are often harvested

inefficiently and then sent to distant markets where the transportation costs can be half or more of the total costs.

The best future role of the federal government – focused on technical assistance and other facilitation efforts -- in forest management is illustrated by the work of the Forest Products Laboratory in Madison, Wisconsin, a joint effort of the University of Wisconsin and the Forest Service. In recent years it has conducted various studies of the economic potential of small-diameter trees and explorations of potential markets. For example, the Forest Productions Laboratory is working with the Watershed Research and Training Center in Hayfork, California. Experience to date has shown that removal of small-diameter trees costs \$208 per thousand board feet for sale as green raw logs and that these logs can earn \$200 in revenue per thousand board feet – thus involving a small loss but much lower net costs than simply paying for removal of the logs with no subsequent commercial sale. Use of the trees for processing and sale as flooring increases the costs to \$800 per thousand board feet; the revenues, however, rise to \$1,200 per thousand board feet, yielding a substantial profit surplus in this form of utilization of small-diameter trees.

The Los Alamos fire this year focused new attention on similar fire prone forests in the watershed area for the nearby city of Santa Fe, New Mexico (the Los Alamos fire started as a prescribed burn on Bandelier National Monument but then escaped and soon spread to the Santa Fe National Forest where it erupted in the tinderbox conditions of this forest and where most of the actual burning occurred). If a similar fire were to burn in the Santa Fe watershed, massive siltation and runoff might threaten the city water supply. Seeking protection against this outcome, the city and its water board are working with various groups to plan a thinning program. Given the large procedural hurdles and delays facing actions on federal lands, the first thinning efforts planned in the watershed will take place on private lands. It is expected that some of the thinned trees will be sold commercially, thereby reducing the expected bids from contractors to complete the job.

It will require new legislation to achieve the full large potential for utilization of small-diameter trees. The legislation will need to authorize planning for forest thinning over a longer time frame and government commitments to make sufficient wood volumes available to justify new local mills designed for processing of small-diameter trees. The supply commitment might have to cover a five to ten year period in order to allow for a sufficient period to pay off an investment in a mill and other facilities. Similar considerations have dictated long term contracts of up to ten years duration with concessionaires in the National Park System. Transfer of the park concession model to fuels reduction programs on the national forests might prove appropriate in other respects – for example, a specific large area for tree thinning could be designated (perhaps as a result of a local collaborative process) in an area surrounding a community and then a long term contract might be awarded to a “concessionaire/tree harvester” to do the job, including the building of a new mill to process the small-diameter trees.

Cost-Sharing of Fuels Reduction

Although commercial sale of small-diameter trees can significantly reduce the public costs of thinning forests to reduce fire hazards, many fuels reduction efforts may still require some element of public funds. The state and local government partners in the planning and development of these efforts should also contribute a share of the costs. Much of the benefit of excess fuels reduction will accrue to the citizens of the states and localities. It is often their actions in building homes and other structures in forested areas that increase the dangers of wildland fire and the costs of fire fighting. States and localities have the regulatory authority to control the location of such development in fire prone areas. In general, states and localities will have an incentive to plan for a more cost-effective approach to fuels reduction in surrounding forests, if they are contributing a share of the costs.

An equal division, 50 percent federal and 50 percent state and local, might be an appropriate cost sharing formula.

Curbing Unilateral Veto Power

Numerous observers have described the current decision making process for the national forests as “broken.” The land use planning system, by most accounts, does not work. It promotes conflict and polarization as much as agreement. The process of planning takes long periods and causes many delays. In the end, the land use plan often fails to provide the basis for actual management decisions. Land use planning thus becomes more a matter of public relations, or litigation strategy, than the basis for rational decision making that was originally the goal of Congress in mandating planning in the 1970s.

The land use planning and other procedural requirements afford so many opportunities for appeals and other delays that outside groups in effect can often exercise a unilateral veto power – if not forever, at least for the duration of the appeal process, and then perhaps through continuing rounds of further appeals. Litigation then often arises which involves its own burdens and delays.

The effect of the current system is often to impose a de facto management decision of no action. Reforming the current system has been complicated by the fact that some groups have in fact preferred the no action alternative, and thus have strenuously resisted any efforts to curb the existing opportunities for delay and obstruction. It may have seemed that no action was a reasonable approximation to a policy of achieving “natural” conditions on the forests – if no management actions were taken, then the human role would seemingly be minimized and natural forces might appear to be driving the system.

However, the forest fires of 2000 have shown the limitations of a no action strategy, and the fact that it will not achieve “natural” conditions on the forests. Because of a century of fire suppression, the fires that have burned have been much more intense and otherwise far out of the range of “natural” fire. They in fact have imposed a substantial human-caused change on the ecological condition of the national forests. There is in fact probably no management strategy at this point in time – including no action -- that could validly be described as achieving a “natural” result.

Yet, the current system in effect is strongly biased in favor of those who prefer the no action alternative. It is possible for a group of concerned parties to discuss forest management options and develop a fuels reduction plan that has wide community support, and yet any one of these parties will have the ability to prevent its implementation. Indeed, marginal parties who may disagree and who may not have participated in the management decision process will also have this unilateral veto power, if they possess a minimum of money and legal skill.

The existence of an outside veto power partly reflects the distrust of the Forest Service and other federal agencies on the part of many people in the West. They are reluctant to let the agencies act on their own when the agencies have made so many mistakes in the past. However, if management decisions on federal forests reflect a much wider range of participation and buy-in, the existence of an outside veto power is less justifiable and in fact becomes a serious obstacle to effective management actions.

If a veto power on the actions of federal agencies is necessary, it should in any case not be a unilateral veto power available to anyone. It should be assigned to a state or local official who in fact represents politically a much wider segment of public opinion. The approval of the governor of a state, for example, might be required in order to implement any fuels reduction plan on the national forests. Or a similar requirement for approval might be given to the mayor of the community in the immediate vicinity of a national forest where a prescribed burn or thinning were being planned.

In any case, if the Congress wants effective action to improve forest health and reduce forest fire hazards at any time in the near future, it will have to address the problem of the procedural hurdles to management action created by numerous past statutory requirements for planning, environmental impact statements, and other decision making requirements.

FIGURE 1 – 1990s WARNINGS OF CATASTROPHIC FIRE

1993 – A panel of leading American foresters meets in Sun Valley, Idaho. Its report states that the policy of suppressing forest fire, as has been followed in western forests for most of the twentieth century, has resulted in a large buildup of “excess fuels” As a consequence, “Wildfires in these ecosystems have gone from a high-frequency, low-intensity regime which sustained the system, to numerous high-intensity fires that require costly suppression attempts, which often prove futile in the face of overpowering fire intensity. High fuel loads resulting from the long-time absence of fire, and the abundance of dead and dying trees, result in fire intensities that cause enormous damage to soils, watersheds, fisheries, and other ecosystem components.”

1994 – The National Commission on Wildfire Disasters, created by Congress, declares that “millions of acres of forest in the western United States pose an extreme fire hazard from the extensive build-up of dry, highly flammable forest fuels.”

May 1995 – The U.S. Forest Service publishes *Course to the Future: Repositioning Fire and Aviation Management*, declaring that under current policies “the potential for large, catastrophic wildfires continues to increase” and when they occur, as they inevitably will, “it will directly conflict with our ecosystem goals.”

December 1995 – The U.S. Secretaries of Agriculture and of the Interior jointly issue a report on *Federal Wildland Fire Management*, stating that “millions of acres of forests and rangelands [are] at extremely high risk for devastating forest fires to occur.” The Secretaries declare that many forested areas are “in need of immediate treatment” to reduce fire hazards.

1997 – A panel of leading foresters reports to Congress that “fires in the [wetter] Pacific Northwest occur less frequently than in the inland West, but can be even more catastrophic because of the high fuel volumes (dead trees). The limited road system and infrastructure make federal lands in this region increasingly susceptible to catastrophic fires.”

1998 – Barry Hill, Associate Director for Energy, Resources, and Science issues of the General Accounting Office, testifies to the Congress that as a result of past policies of fire suppression in the interior West, “vegetation accumulated, creating high levels of fuels for catastrophic wildfires and transforming much of the region into a tinderbox.”

1999 – The General Accounting Office issues a report on *Western National Forests – A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats*. The report finds that the Forest Service “has not yet developed a cohesive strategy for addressing several factors that present significant barriers to improving the health of the national forests by reducing fuels. As a result, many acres of national forests in the interior West may [still] remain at high risk of uncontrollable wildfire at the end of fiscal year 2015.”