

FIRE POLICY AND RELATED FOREST HEALTH ISSUES

JOINT OVERSIGHT HEARING

BEFORE THE

COMMITTEE ON NATURAL RESOURCES

AND THE

COMMITTEE ON AGRICULTURE HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

SECOND SESSION

ON

EVERY FACET OF THE FOREST SERVICE, THE FOREST ECOSYSTEM,
AND THE HAZARDS OF FOREST FIRES, ANALYZING FIRE POLICIES,
AND DETERMINING THE EXTENT AND NATURE OF FOREST HEALTH
PROBLEMS AND THE PRIORITIES AND METHODS OF DEALING WITH
THOSE PROBLEMS

OCTOBER 4, 1994—WASHINGTON, DC

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FIRE POLICY AND RELATED FOREST HEALTH ISSUES

TUESDAY, OCTOBER 4, 1994

HOUSE OF REPRESENTATIVES,
COMMITTEE ON NATURAL RESOURCES,
AND, COMMITTEE ON AGRICULTURE,
Washington, DC.

The committee met, pursuant to call, at 9:10 a.m. in room 1324, Longworth House Office Building, Hon. George Miller [Chairman of the Natural Resources Committee] presiding.

Chairman MILLER. And we will now convene a joint hearing of the Natural Resources Committee and the Agriculture Committee, and Mr. de la Garza is recognized.

Chairman de la Garza, my understanding, Mr. Chairman, is that you have a markup at 10 o'clock; is that correct?

Chairman DE LA GARZA. Yes.

Chairman MILLER. OK.

STATEMENT OF HON. E (KIKI) DE LA GARZA, A U.S. REPRESENTATIVE FROM TEXAS, AND CHAIRMAN, COMMITTEE ON AGRICULTURE

Chairman DE LA GARZA. Thank you very much.

Mr. Chairman, we appreciate your courtesy and your allowing us to hold this meeting in your committee room. This hearing is—in view of all of the problems that we have had of recent—very timely. We need to look at every facet of the Forest Service, the forest as an ecosystem, and the continuing hazard of forest fires.

I do hope that we have the opportunity with all of the witnesses today to be able to ascertain where we are and what else we need to do in this endeavor. I thank you again for your courtesy.

STATEMENT OF HON. GEORGE MILLER, A U.S. REPRESENTATIVE FROM CALIFORNIA, AND CHAIRMAN, COMMITTEE ON NATURAL RESOURCES

Chairman MILLER. Thank you, Mr. Chairman.

This oversight hearing, as you point out, is very important to those of us concerned with the stewardship of the public lands and with the impact of fire and fire policies as they relate to the public lands.

We have witnessed again this year, as we have in many past years, the impact of fire. And, unfortunately, this year we had the tragic impact of fire with the loss of the lives of the firefighters and the loss of people's property. This calls into focus how we can best put together a policy that will respond to the evolving forest poli-

cies and to the changing living patterns and habits of the citizens of this country who are moving into forested areas in increasing numbers.

Because of the fact that you have a markup at 10 o'clock, and I want to make sure Members of your Committee hear the statements of the witnesses, I would ask that opening statements be placed in the record, if we can, and proceed on with the hearing. And at this point we would recognize Mr. DeFazio.

Mr. DEFAZIO. That would be fine by me, Mr. Chairman. I am anxious to hear from the witnesses and I will ask questions later.

Chairman MILLER. Anyone else have a statement they want to put in the record at this point? Mr. LaRocco.

**STATEMENT OF HON. LARRY LAROCO, A U.S.
REPRESENTATIVE FROM IDAHO**

Mr. LAROCO. Mr. Chairman, I would also ask unanimous consent to insert a statement into the record.

I appreciate your holding this very important hearing. It is starting to snow out in Idaho, which suggests the fires will finally be put out but not after hundreds of thousands of acres have burned in Idaho. In some ways, it is nature's way of managing the forest. In other ways, I think it suggests we can do a better job on the ground.

I, of course, have introduced a few bills dealing with forest health, and we held a hearing the other day in the Agriculture Subcommittee on H.R. 5007, The National Forest Stewardship Contract Act of 1994. You have been very open to suggestions that I have made on forest health initiatives, and I look forward to hearing the Administration's position and where they might be going on the ground.

I know that Assistant Secretary Lyons, in response to a letter I sent earlier, is moving along to identify pilot and demonstration projects out in the inland West. So, again, thank you for holding this hearing and I welcome the testimony.

Chairman MILLER. Thank you.

[The statements of Messrs. Miller, LaRocco and Dickey follows:]

STATEMENT OF HON. GEORGE MILLER, A U.S. REPRESENTATIVE FROM CALIFORNIA,
AND CHAIRMAN, COMMITTEE ON NATURAL RESOURCES

This is an oversight hearing by the Committee on Natural Resources and the Committee on Agriculture on the fire and forest health policies of the Departments of the Interior and Agriculture.

It is my hope and expectation that the two agencies will continue to analyze their fire policies, determine the extent and nature of forest health problems throughout the west, determine the priorities and methods of dealing with those problems on a site-specific basis and finally, return to us early in the next Congress with their recommendations so that we may act on them prior to the next fire season.

I would like to commend both agencies for their ability to address the numerous fires we have had—and will have—this season. I know it has been a staggering burden. I also want to share my sympathies for the tragic loses of so many firefighters.

This hearing is a little unusual. In addition to the witnesses at the table, both agencies have brought a number of technical and supporting witnesses. This should help them answer almost any question we have.

It is my understanding that the Agriculture Committee has scheduled a full committee markup for 10 a.m. Accordingly, I would like to dispense with opening statements so that the Agriculture members will be able to hear the testimony and have some of their questions addressed before they have to leave.

STATEMENT OF HON. LARRY LAROCO, A U.S. REPRESENTATIVE FROM IDAHO

Thank you, Mr. Chairman, for convening today's hearing on the very vulnerable state of the forests in the West. Having worked several years on the forest health issue and how it relates to wildfires, I welcome the attention of both Committees.

Last June, at my request, Assistant Secretary of Natural Resources and Environment for the Department of Agriculture, Jim Lyons toured Idaho's national forests and found them to be a "tinderbox waiting to explode." And following the disastrous fire in Colorado, the *New York Times* quoted Assistant Secretary Lyons as stating, "We need to do prescribed burning, more salvage, more harvesting of dead and dying timber, which is brought about by disease and insects."

Early this summer, I made an aerial inspection of the Boise, Payette and Clearwater National Forests. What I saw was a disaster waiting to happen. I viewed overly-dense stands of trees, well outside their historical range of variability, extremely high fuel loads where mortality has outstripped decomposition, and forests riddled with dead and dying trees.

Subsequently, I wrote to Assistant Secretary Lyons to convey a sense of urgency and to recommend the use of the Administration's authority to implement forest health pilot projects for Idaho's failing forests. Scientists and land managers have indicated overstocked stands could be thinned using methods which would be light on the land and bring stand densities within their historical range of variability. In doing so, stands could be created which are more resistant to fires, similar to those which developed naturally before years of fire suppression and outmoded logging practices led to large-scale forest conversions.

Last August, I received a response from Assistant Secretary Lyons which I would like to be included in the hearing record, along with my letter. Mr. Lyons' letter confirmed that "wildfires affecting Idaho and other western states are symptomatic of the excessive fuels and poor condition of many forested areas in the region." His letter spelled out his intention to take "aggressive action to deal with the situation."

The Assistant Secretary directed Forest Service Chief Jack Ward Thomas to develop a proposal, by September 30, for a forest health initiative in specific areas of the national forests in the West. The proposal would determine the nature and extent of the problem and "recommend measures for improving the health of these forest ecosystems through the appropriate use of salvage logging, thinning, prescribed burning and other silvicultural tools."

In his letter he states his intention to "move expeditiously" to implement the recommendations. "I am confident that the forest health initiative will enable us to intensify efforts to deal effectively with these serious forest health problems, by reducing heavy fuels, capturing mortality, thinning overly dense stands, and other measures recommended."

Mr. Chairman, I am eager to hear from the Assistant Secretary today about his proposal. I, too, am satisfied the scientific evidence justifies such an effort. In addition to the science, the Forest Service is developing a solid portfolio of forest health projects where stands have been thinned by removing smaller diameter and diseased trees. The accumulation of dead material has been reduced, producing a healthy overstory and a more fire-proof stand.

For example, in the Boise National Forest on Tiger Creek, shortly before the 1992 Foothills Fire, the woods were first thinned of underbrush and then lightly burned by the Forest Service. At the height of its intensity, the Foothills Fire raced through the treetops until it reached the Tiger Creek site, where it subsided—and the thinned woods survived intact.

Mr. Chairman, what is the status of forest health in Idaho? Even a casual look at the statistics on Idaho's forests is telling. The Intermountain Research Station has found that from the late 1500s to the late 1800s, stand densities in the Boise basin ranged from six to 28 drought- and fire-resistant Ponderosa pine per acre. In 1993 stand densities have reached 533 trees per acre, most of which are drought-intolerant Douglas firs and 60 percent of which are dead.

On the Payette's timber land, average mortality is 407 board feet per acre, while growth is only 248 board feet. Mortality figures on the Boise are even worst. Between 1988 and 1993, the Forest lost more than 400,000 trees on more than 1 million acres of affected forest.

With this build up of fuel loads, the size of fires has greatly increased in recent years. For example, between the years 1955 and 1985 the average number of acres burned by forest fires on the 2.5 million acre Boise National Forest was 3,000 acres per year. In the five years from 1986 to 1992, the annual average has risen to 56,000 acres, due to overly dense stands, and drought conditions.

Mr. Chairman, I believe this is clearly an issue of pay now or pay later. As my colleagues know, each year a large amount of Federal funding is needed to combat

wildfires, and much of the time this type of default management is accomplished under dangerous situations where firefighters lives are put at risk and resource values are lost or greatly reduced.

In the 1992 Foothills Fire, suppression costs and emergency rehabilitation for the 140,000 acres of Boise National Forest land burned was \$24 million, or roughly \$170 per acre. The cost of pre-commercial thinning of the Tiger Creek area, which the fire skirted, was only \$125 per acre. And the commercial thinning in the area returned \$30 to \$1,500 per acre to the Forest Service, depending on the timber market.

I would much rather have the Forest Service use Federal dollars for sound proactive management of our national forests, like the Tiger Creek area, to reduce the risk of catastrophic wildfires.

At last November's workshop on Assessing Forest Ecosystem Health in the Inland West, the scientists concluded, "the costs and risks of inaction are greater than the costs and risk of remedial action." Mr. Chairman, I could not agree more.

That is why in the last Congress I introduced the "National Forest Health Act of 1992." With the bipartisan cosponsorship of 30 Members of the House of Representatives, the bill progressed through the Agriculture Committee. My forest health bill has been re-introduced in this Congress as H.R. 229 where it is pending in both the House Agriculture and Natural Resources Committees. My legislation has received two Idaho hearings, including one by House Agriculture Committee's Subcommittee on Specialty Crops and Natural Resources.

The Administration has indicated it possesses much of the authority needed to implement measures included in H.R. 229, and I have strongly urged them to do so without delay. Therefore, the response by Assistant Secretary Lyons is particularly welcome.

My bill would authorize the Secretaries of Agriculture and Interior to carry out forest health improvement programs, in consultation with State and Federal fish, wildlife and cooperative forestry experts; to reduce further damage to forest resources; and to promote management of sustained, diverse, and healthy forest ecosystems.

On August 20th, I also introduced H.R. 5007, "the National Forest Stewardship Contract Act of 1994" to expand on my original legislation by providing a tool for the Forest Service to focus on forest health through the use of land stewardship contracts.

And on September 29, the Subcommittee on Specialty Crops and Natural Resources held a hearing on H.R. 5007, where the Administration testified favorably on the bill.

Using a stewardship contract, the Forest Service will be able to accomplish needed watershed and forest restoration activities while providing merchantable timber and additional employment in local communities—all in one project.

Currently, the Forest Service relies heavily on timber sales—both salvage sales of dead trees and green sales—as the principal means for silvicultural treatment. The Forest Service has no program support or direct source of funds for restoration.

The House Interior appropriations bills for fiscal years 1992 and 1993 directed the Forest Service to test the land stewardship approach to Federal timber sale contracting on several Western national forests, including the Kaibab and Coconino in Arizona, the Dixie and Lake Tahoe in Nevada, and the Idaho Panhandle.

In these bills, Congress directed the Forest Service to "apply a reasonable portion of the value of timber removed . . . as an offset against the cost of stewardship services received including but not limited to site preparation, replanting, silvicultural programs, recreation, and wildlife habitat enhancements." The intent of Congress was to "help the private sector promote the Forest Service ecosystem management initiative . . . to give contractors an incentive to become as concerned with sustaining ecosystems as with sustaining trees."

The "National Forest Stewardship Contracting Act" builds on the experience gained from these pilot projects and includes provisions to assure efficiency and accountability.

With the advent of ecosystem management, recent reduction in Forest Service and Bureau of Land Management budgets and personnel, and the loss of a reliable Federal timber supply, stewardship contracts hold promise for helping to resolve forest health problems and the economic crises occurring in many timber-dependent communities across the West.

Mr. Chairman, the raging wildfires in Idaho and the West have captured the attention of the country and brought a focus to forest health. The House of Representatives has responded with this joint hearing and the Administration has prescribed an aggressive forest health initiative. Our goal should be to keep the momentum and bring all the powers to bear on this very time-sensitive problem.

I believe the health of our national forests in the West warrants the immediate attention of both Congress and the Administration, and I am here to urge continued action. Thank you.

STATEMENT OF HON. JAY DICKEY, A U.S. REPRESENTATIVE FROM ARKANSAS

Mr. Chairman, thanks for holding this joint hearing today with our colleagues from the Agriculture Committee, on which I also serve. My understanding is the hearing will focus on the western forest fires and fire fighting policy, as well as forest health in general and how existing forest management practices may have contributed to the intense nature of many of the fires out west.

It seems to me the basic issue of forest health is a concern not only in the west, where the problem is probably heightened because of the serious fire threats to such large, dry areas, but are of concern to us in the south as well. It is our view that current forest management practices significantly restricts proper managed thinning of timber stands, reduction of undergrowth and other forest management techniques that could help reduce the growing number of dead-and-dying and insect infested trees in our forests. That situation, and the inability to even cut salvage timber, either for lack of proper funding or management constraints, certainly contributes to less healthy and vigorous forests in our part of the country, and increases the potential for serious and destructive fires there too.

So, I look forward to reviewing the testimony today and hope that it may underscore the forest management concerns of those from other parts of the country and contribute to some needed management changes to reduce these threats.

Thank you.

Chairman MILLER. We will begin with our witnesses. Mr. James Lyons, Assistant Secretary for Natural Resources and Environment at the Department of Agriculture; Mr. Bob Armstrong, Assistant Secretary, Land and Minerals Management, Department of the Interior.

Welcome to the committee. The others who are accompanying you, I understand, are here in support but you both will be providing the testimony; is that correct?

Mr. LYONS. That is correct.

Mr. ARMSTRONG. That is correct.

Chairman MILLER. Mr. Armstrong, we will begin with you, and welcome to the committee.

STATEMENT OF BOB ARMSTRONG, ASSISTANT SECRETARY, LAND AND MINERALS MANAGEMENT, DEPARTMENT OF THE INTERIOR, ACCOMPANIED BY MICHAEL DOMBECK, ACTING DIRECTOR, BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR; JAMES DOUGLAS, DIRECTOR, OFFICE OF HAZARD AND FIRE PROGRAMS COORDINATION, DEPARTMENT OF THE INTERIOR; MEL BERG, CHIEF, DIVISION OF FORESTRY, BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR

Mr. ARMSTRONG. Thank you very much, Mr. Chairman.

Mr. Chairman, Members of the committee, I am speaking today on behalf of the four separate, but integrally linked, Interior wildland fire management programs—the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service, and the Bureau of Indian Affairs. Although I am speaking specifically from the standpoint of Interior, I feel confident our views on the major issues and problems in wildland fire management are consistent with those of the Forest Service.

The purpose of my testimony today is to discuss with the committees a number of issues related to wildland fire. I am not pre-

pared to announce any new policies or changes in direction or emphasis, but I view this hearing as an avenue through which we may mutually explore the many complicated and interrelated fire and land health issues with the goal of improving our programs and policies in the future where appropriate and necessary.

The department has been working on improving efficiencies and finding solutions to program opportunities identified in the 1989 Fire Management Review Report, the 1990 General Accounting Office Prescribed Fire Program Report, and the 1993 Report of the Commission on National Wildfire Disaster.

We have expanded training opportunities through the use of prescribed fire for our managers, increased cooperation with other agencies, such as the Forest Service, broadened partnerships with State and local fire agencies, and we have increased our efforts to inform the public about the role of wildfire.

While we may not as yet have taken all the steps to improve the efficiency and performance of our fire program, we are committed to this end, and I welcome the committees' advice and counsel.

I am joined today by a number of supporting witnesses who I will introduce at this time.

First, to my left, is Mike Dombeck, who is the Acting Director of the Bureau of Land Management; Jim Douglas, who is the Director of the Office of Hazard and Fire Programs Coordination; and Mel Berg is the Chief of the Division of Forestry at BLM.

Additionally, we have present Steve Botti, Gardner Ferry, Roger Erb, Al Dunton, and Stan Coloff. And between these people, they should be able to answer any of the questions that you have about BLM and Interior and its fire efforts.

The Office of Hazard and Fire Programs Coordination works with our four land management agencies which are involved with fire. Together they comprise the Interior Fire Coordination Committee.

The purpose of the program is to safely and efficiently execute our wildland fire protection responsibilities and to use prescribed fire as a means to achieve landscape and ecosystem health. Toward this end, our mission is to manage a safe, effective, and accountable wildfire management policy, coordinate with other Federal and State agencies, and manage the use of fire for range, forest, and other resource benefits.

The four Interior agencies work with the Forest Service, work with them on a daily basis at the national, regional, and local levels, and through the National Wildfire Coordinating Group, these agencies work with the States to develop and maintain all of the operational standards, systems, and qualifications that allow for a well-coordinated interagency and intergovernmental program to operate. Without this kind of cooperation, it would be impossible for us to deal with the problems.

As you know, the 1994 fire season ranks among the worst. So far it has not been the one with the most fires and the most acres burned, the highest costs, or even the deadliest, but it certainly ranks as the busiest, as our interagency coordination system was stretched as thin as it has ever been.

Major fire activity throughout the West occurred from the end of May through the present time. Demand for resources often exceeded the supply. This necessitated prioritizing incidents and allo-

cating resources by multiagency coordinating groups that has only recently tapered off. And, as we are too tragically aware, we have lost 26 aircraft personnel and firefighters, including 14 in the South Canyon fire in July.

Within the Department of Interior, through September 26 of 1994, there were 7,940 fires, which burned 1,264,626 acres. We estimate our suppression costs have been around \$168 million, a substantial amount of which was in support of the Forest Service and the States in their efforts. Like our partner agencies, we anticipate a busy fall fire season in California, particularly Southern California, which will add to our costs and our workload. The severity of the 1994 fire season provides the opportunity to explore and address a number of issues of wildland fire policy and operations.

As we begin to assess the 1994 fire season, and the lessons of the past, our management experience indicates that three themes emerge. First is the inevitability of fire and the natural role that it plays; second, the importance of approaching fire management as a matter of risk management; and, three, the need to consider the long-term perspective in evaluating our issues and solutions that we propose for the future.

We must acknowledge that fire plays a critical role in the natural systems. From the Pine Barrens of New Jersey to the redwood forests of California to the sagebrush plains of the Great Basin to the lodgepole forests of the northern Rockies, fire has shaped the landscape for thousands of years.

Our task, then, as land and resource managers is not only to control fire, but to manage fire. To acknowledge the risk it presents, we need to understand how it serves as a vital tool in our resource management efforts. Risk in wildlife fire management involves two components: Taking steps to reduce the risks through prevention, preparedness, and sound resource management practices; and, two, being willing to take risks in order to accomplish management objectives, including reducing the total costs of fire management efforts.

Our managers on the ground must be given the tools they need to reduce risk. Just as important, we need to build a management culture that supports decisions by managers to take appropriate risks. There are no simple short-term solutions. Solutions will be long-term, requiring actions in the short run to produce results in the long run.

I would like to raise three major issues facing the wildland fire management program. I will summarize what I believe are the key issues. The experts who have accompanied me will then be prepared to discuss with you each of these issues, as well as any others.

First, preparedness planning, having the appropriate fire personnel and other resources available and positioned before the wildfires occur. This includes recruitment and training, equipment and facility preparation, aviation contracting, planning, and inter-agency coordination.

We assign fire personnel and resources based on a model of historical fire occurrence, fuels, weather, topography, accessibility and natural resource loss to identify needed fire personnel and resources for an average fire season. This approach to fire planning

has proven to be most effective for the average fire season and for single agency initial attack-level efforts.

While we have the capability to augment local agency operations in times of particular severity during the year, planning systems are not designed to meet the demands of widespread above-normal situations. We simply do not know when or where they might occur.

Finally, our planning systems do not address such issues as noncommodity values, such as homes that have been built in the forests, extended attack and project fire operations, and inter-agency regional planning. Addressing these and other preparedness issues will reduce the risk of high suppression costs.

We plan to study the effects of our planning systems and look for ways in which to improve them in order to address these risks.

The second major issue that we face is the role that fire plays in the management of our natural resources and the maintenance of the overall ecosystem and landscape health. Beyond its role as a destructive force, fire affects ecosystems in positive ways, and we are beginning to more fully understand and utilize this concept. As an ecological process, fire exerts a significant influence on numerous natural processes. Fire recycles nutrients, it reduces biomass, it influences insect and disease populations, and it is the principal change agent affecting vegetative structure, composition, and biological diversity.

The emphasis on controlling and limiting fire for the past several decades has resulted in excessive fuel buildup in many areas of the West, and it has contributed to unhealthy forests, rangelands and watersheds, and has fostered a public and management reluctance to use prescribed fire in the conduct of natural resource management programs.

Consequently, our firefighters are at risk due to a greater potential for severe fires and our forests and other lands are at risk from excessive density of vegetation, unnatural outbreak of insects, exotic species, and extreme fire behavior. In turn, our neighbors are at greater risk as we become less able to control the fires when they occur.

While the importance of reintroducing fire into the management of natural resources is gaining wider acceptance, the barriers to doing so remain large. Traditional planning structures and rules rarely recognize the value of using in greater prescribed fire activity in the short run to save both the costs of suppression and lost resources in the future; air quality rules frequently do not permit the discharge of smoke from prescribed fires; increased settlement in wildland areas reduces the flexibility of managers to use fire; funding does not permit an adequate interagency level of research in landscape-scale prescribed fire and other fuels practices; and public and management fear of fire continues to be substantial.

Our knowledge level and availability of scientific tools to aid in the use of prescribed fire is constantly expanding. Therefore, managers must evaluate each situation separately, consider fire history and fire effects, avoid generalizing across the board, and use the latest technology to assess and minimize risk.

Risks are inherent in this type of program, and despite our best efforts, some prescribed fires will escape and burn more acres than

we intend, burn more intensely than predicted, and may threaten life and property. But the risks must be compared to gains that can only be realized through this type of program and to the potential high intensity wildfires that can occur in the absence of an accelerated prescribed fire program.

With the increased need for prescribed fire to help restore and maintain landscape health, we must address air quality issues, specifically smoke emissions from prescribed fire. Smoke management enables fire managers to reduce the amount of smoke generated during a prescribed fire and to direct and disperse the smoke plume to avoid transport of smoke over populated areas and other sensitive zones.

Improved smoke management is perhaps one of the most important elements to consider in developing strategies that will enable the expanded use of prescribed fire in restoring and maintaining the landscape and the ecosystem health.

Improved smoke management will require cooperation from Federal and State air quality regulators. Their regulations must provide for the use of prescribed fire for the purposes of restoring and maintaining ecosystem health and preventing extreme risk.

The last major issue concerns our ability to manage wildfire in areas where more and more homes are being built in and near Federal and State wildlands. For the past several years, America has experienced a major population shift from urban to rural living. Although some of the most recent and highly publicized incidents occurred in Southern California, this is a phenomenon that is found throughout the country and throughout the West. It is a national problem.

Fires occurring in these areas greatly complicate our firefighting efforts. Local communities often lack the resources necessary to protect structures. Our firefighters are trained to fight wildfires, not structural fires. Thus, they are placed at risk when asked to perform duties for which they are not adequately trained or qualified or equipped. As wildland fires resources are diverted to protect adjacent private properties, the ability to protect publicly owned assets, such as structures within our national parks, or structures that are public near the forest areas, are severely diminished.

Use of a fuels hazard reduction program through prescribed burning or other mechanical means is a method of reducing the impact of catastrophic wildfire in the wildland urban interface. In many instances, the fear by private homeowners who do not understand the benefits of prescribed fire, limits the use of prescribed burning. The wildland firefighting agencies have a responsibility to educate and inform the public as to the benefits of a fuels hazard reduction program in helping prevent structure loss during a wildfire.

Over the last several years a number of initiatives around the country have begun to focus on means of mitigating the wildland/urban interface problem. In large measure, the solutions lie at the State and local levels, by addressing the types of building materials used, architectural features and design, methods of ingress and egress for emergency services, and appropriate landscaping around structures. These solutions have faced resistance in many communities due to the higher costs, to both homeowners and to local

units of government, to public regulation of private property, and to lack of appreciation of the risks that location, building materials, and architectural features create. Few, if any, insurance companies provide meaningful incentives for homeowners to build or maintain their properties in a manner that reduces risk from wildfire.

Several years ago, the Department of Interior, the Forest Service, and the National Fire Protection Association launched a National Wildland/Urban Interface Fire Protection Initiative to begin addressing this situation. Recently, the National Wildfire Coordinating Group brought that initiative under its formal jurisdiction as an ongoing project. While continued education of the public about risks and mitigating measures, and the need for better planning and codes at the local level, remain as key elements for reducing the wildland/urban interface problems, two other areas require increased attention.

First, factoring in risk to calculate insurance premiums could provide incentives for homeowners to take measures to reduce hazardous fuel conditions. Second, the role of the Federal Government in providing protection to private structures and communities must be squarely addressed. If the Federal Government is to continue to play a major role, investments of firefighter personnel, training, and equipment will be necessary to reduce risks to firefighters and to adequately protect publicly owned resources as well.

In conclusion, I would like to note, above all else, when we talk of wildland fire management, we are talking about risk management. As we and you explore these and other issues in the coming months, we all need to continue to ask how risks to life, risks to the Federal treasury, and risks to our natural resources can be minimized by improving the manner in which we organize, fund, and conduct fire management programs.

This completes my prepared statement. I, or the experts that are with me, will be prepared to answer any questions you may have, and I look forward to a continuing dialog on this very important subject.

Chairman MILLER. Thank you.

Mr. Lyons, welcome to the committee.

STATEMENT OF JAMES LYONS, ASSISTANT SECRETARY FOR NATURAL RESOURCES AND ENVIRONMENT, DEPARTMENT OF AGRICULTURE, ACCOMPANIED BY JOAN COMANOR, DEPUTY CHIEF, STATE AND PRIVATE FORESTRY, DEPARTMENT OF AGRICULTURE

Mr. LYONS. Thank you very much, Mr. Chairman, Chairman Miller, Chairman de la Garza. It is a pleasure to be here this morning. With me are Joan Comanor, Deputy Chief for State and Private Forestry for the Forest Service; Jerry Williams, Fire Management staff; Joe Lewis, Forest Pest Management staff; and Dr. William Sommers of the Forest Research Organization.

This year's wildfires have brought to the public's attention a forest health problem that had its beginnings over 100 years ago. This year, 657,000 burned nearly 4 million acres in the United States. On national forests alone, 12,000 fires burned over 1.2 million acres. The total costs on National Forest System lands are expected to exceed \$700 million and more than 28,000 firefighters were in-

volved in fighting wildfires this year, including Department of Defense personnel.

Now while Bob has focused some on fire issues, I want to focus a bit this morning on what we believe is one of the root causes for the wildfire catastrophes we have seen this year and in previous years, and that is the forest health concern.

In much of the West, the health of national forests, other Federal lands, and private and State lands is closely related to changes in the historic role of fire on those lands. Without thinning or prescribed fire to replace the effects of wildfire, our forests have changed. Today's forests are particularly susceptible to insects and drought and tree mortality from these agents has been widespread in the West in recent years.

The forest health problems and associated high intensity wildfires are indicators of ecosystems that are not in balance. The same problems will be with us next summer and the next summer and summer after that until we recognized that some short-term and long-term actions are necessary to improve forest health.

We must begin addressing the overall forest health issue on an ecosystem basis by restoring high risk sites to within their natural range of variability, including the use of salvage logging, reducing fuels through mechanical means, thinning densely stocked stands, and the use of prescribed fire to appropriate ecosystems to reduce the risk that uncontrolled wildfire will damage site productivity or destroy human life and property.

From a historical perspective, by the late 1880's, with the elimination of Native American burning and the settlement of Western valleys, and the advent of livestock grazing, fire frequencies in these fire adapted forest ecosystems in the West decreased dramatically. Fire suppression was routinely employed to protect homes, grazing lands, and timber resources.

Beginning in the early 1900's, the composition of Western forests was also affected by timber harvesting, which concentrated on the larger and more valuable species such as ponderosa pine and western larch. This resulted in forest stands with a high percentage of fir when compared to earlier stand compositions.

These ecosystems make up a major portion of the forests in Idaho, the eastern Cascades, portions of California, Arizona, New Mexico, the front range in Colorado, and the Blue Mountains of Oregon. Forest health problems are widespread across these forests.

For example, Douglas-fir and white fir now dominate these sites in densities far greater than when ground fires burned at frequent intervals. Hence, the amounts and distribution of habitat for insects that attack fir species is enriched. The problem has been exacerbated by the recent and continuing 10-year drought which has increased the stress on the densely stocked trees, making them even more susceptible to insects and disease. During this time, insect- and drought-caused mortality has been heavy and widespread in many areas of the West. In addition, some high elevation and lodgepole pine forests have major forest health problems.

Taken together, the interaction of human influence and natural events have resulted in an ecological condition that is frequently described as a forest health problem.

The problem culminates when such stands, with very heavy fuel loadings resulting from tree mortality, burn at very high temperatures and over extensive areas. Such high energy fires are much more damaging than naturally occurring fires, because the dense fir stands, containing or dominated by dead trees killed by insects and disease, provide a means whereby fires can "ladder" into the tree crowns, including old growth forests.

These crown fires produce higher intensity, rapidly spreading fires that are difficult or in fact impossible to control, as we have seen in Idaho this year. Such fires can heat soil so excessively, that for some years afterwards, nutrient levels are drastically lowered and these soils actually repel water, causing significant watershed and water quality impacts as well as problems in re-establishing trees and regeneration.

Insects, disease, and wildfire are normal components of the ecological processes in these forests. However, when the ecological state of the forest is altered by the absence of natural fire and by other management practices of the past, the role of insects, disease, and wildfire is likewise altered. The frequent, low intensity fires of the past created forests that were ecologically more stable than the forests we see today. The current forest ecosystems, particularly on warmer, drier sites, are more susceptible to insects, disease, and stand replacement fires than have been observed and recorded before.

Once a fire occurs that removes the entire stand, all forest resources are dramatically altered. Even with aggressive restoration and rehabilitation efforts, it commonly takes years to restore productive stands to restore the health of those ecosystems.

I want to place additional emphasis on a matter that Bob raised, and that is the growing concern for increased loss of lives and personal property caused by recent fires in the West, which has been exacerbated by the wildland/urban interface. Forest health problems are dramatically magnified when more and more people build homes in natural settings where fires historically burned every 5 to 30 years. In fact, among the worst national disasters in terms of property loss were the October 1991 Oakland fire, which caused \$1.7 billion in damage and in the October 1993 California fires that caused \$950 million in damage.

These interface areas are protected by a combination of local, State, and Federal fire protection personnel. In deploying our Federal wildland firefighting resources, our policy is to first protect life and property. In large wildland fires on wildland/urban interface, city, county, and rural volunteer fire departments cannot protect every home. As a result, we must divert wildland fire suppression resources from protecting natural resources to protecting structures.

The increasing losses of private property illustrate that we must begin addressing basic, common sense, fire prevention and fuel reduction guidelines in these areas. For example, State and local governments need to address building codes necessary for "firewise" construction and for providing adequate access into these interface areas for evacuations and fire equipment.

All of us involved in firefighting in this wildland/urban interface need to increase our public education and involvement to assure

firewise landscaping. A recent example of this effort was the Los Angeles County supervisors approving a ban on wood shake and shingle roofs, stricter building and fire codes, stronger rulings for removing brush, and improvements in water delivery systems in the county's fire-prone areas. In addition, we need to address the recommendations of the Rural Fire Protection in America task force as well as those generated by the National Wildfire Disaster Commission.

The Forest Service can only take direct actions to reduce this risk, however, in our National Forest System lands. It is for others to decide whether or how to address this risk on private lands.

However, we need to jointly begin to find ways to reduce the wildfire risks in this wildland/urban interface. If this is not done, we will continue to find ourselves deploying our wildfire suppression resources to protect structures in the wildland/urban interface at the expense of valued elements to the ecosystem.

If I could, Mr. Chairman, I would like to focus some now on a report that Chief Jack Ward Thomas and I requested of a multidisciplinary, multilevel team to evaluate forest health conditions in the West, to identify impediments that might limit other agencies to address the forest health problems and offer recommendations as a team to the chief and I in our resolving such impediments.

This team was assembled primarily from individuals from the field in late August and they have been working literally nonstop since that point in time to develop a series of recommendations. Frankly, this is one of the first efforts Jack and I have initiated to try to bring people into the Washington office from all levels of the work but with particular emphasis on field experience to help address a national policy issue.

The team of 13 individuals has worked hard to fulfill its mission. Unfortunately, however, the report is not yet completed. I received a draft of their work only late last night so I will be unable to provide you with a great deal of insight into the team's recommendations, but I can assure you as soon as the report is completed, we will provide you and the other Members of the committees with a copy. Certainly, you will have copies available for inclusion in the hearing record.

From a brief reading last night, I can assure you the team took its mission to heart. They have identified as their main goal the desire to get on top of the forest health situation in the West, to foster improved coordination and cooperation with other Federal, State, and local agencies as well as the tribes.

In addressing existing administrative and organizational impediments to progressing toward this goal, the team surveyed national forests throughout the West and identified approximately 5 million acres of treatment opportunities that they believe would over the next two years help to restore forest and ecosystems to a more healthy condition. They noted, however, that the problems that have evolved since the onset of settlement will not be solved soon or easily. Nevertheless, the team believed that actions could be taken now to accelerate on-the-ground activities that reduce risk to people, properties, and unique or valuable elements of the ecosystem.

The team emphasizes, however, the timely removal of mortality from insects and diseases increased by drought. Through salvage sanitation or regeneration cutting we can improve the ecological conditions and improving the large loss of funds that might be required later.

This is an extremely important point, Mr. Chairman. We spend hundreds of millions of dollars each year for fire suppression efforts and only a fraction of that money to prevent large, catastrophic wildfires. I would offer as an example of the benefits of that kind of example, if I could.

I toured the Entiat fire, one of the largest we have had in eastern Washington and had an opportunity to tour an area called Tyee Creek, which is a tributary to the Columbia River system. Tyee Creek is a critical watershed, as designated by the President's forest plan, and was recently surveyed to determine what management prescriptions might be appropriate to maintain the character of those stands for the purposes for which it was designated.

One of the management goals that was identified was reduction in fuel loading. Unfortunately, before we could make that investment, the fire at Tyee Creek had literally destroyed the watershed. Based upon a survey that was done by a joint SCS-Forest Service team in the area, the restoration costs associated with bringing Tyee Creek back to its previous stature will run \$8 to 10 million.

In the short-term, we will invest \$3 to \$4 million simply to avoid extensive mud slides and other disastrous effects from the immediate fire which could impact on the salmon, steelhead, and bull trout which happen to occupy elements of the watershed. Obviously, if we had had the opportunity and the wisdom to make investments up front to reduce some of the fuel loading, we may have, emphasize may have, been able to reduce the additional cost that we currently face.

The team that we put together put it this way: Conservation is preferable to actions which may later provoke the need for restoration. It is costly to restore composition structure and processes of ecosystems. Therefore, preventing catastrophic loss of biodiversity, long-term site productivity, and public safety are the highest priority in restoration activities. But the time is critical for the prompt implementation of forest health problems where it presents a needed immediate step in long-term planning for sustainable ecosystems.

Now, the team did begin developing a process for setting priorities for more forest health projects, the kinds of projects we hope to initiate over the next two years. Keys to this process were, first, reducing the hazards to catastrophic loss of ecosystem structures, composition and processes by reducing fuel continuity and reducing fuel levels. Simply stated: The team recommended that firebreaks or breaks in the landscape could be a very important tool that could be used for this purpose. The challenge, of course, is to develop breaks consistent with nominal landscape patterns while avoiding processes that might increase forest fragmentation.

Second, the team recommended management should seek to restore critical ecosystem processes to forested landscapes. While insects and disease are a normal part of dynamics, recent outbreaks appear to be more severe than might be expected. The goal should

be to restore the role of insects and disease to processes and patterns more consistent with the historic role in forest stands.

The second critical ecosystem process is fire, for many but not all ecosystems, and that is the reintroduction of predictable fire.

Finally, the team would place priority on stressed ecosystems, including degraded riparian areas, degraded fish and wildlife habitat, overstocked forest lands, and unstable streams. However, the team emphasized the need to restore processes in disturbance before a major investment was made in restoration along these lines. If not, they argued, we will forever treat the symptoms and fail to address the root cause of the problem.

Part of the team's effort was to consider the human element in management. Through extensive discussions with individuals representing the spectrum of interests on the subject of fire and forest health, the team identified the types of projects that might engender less controversy and opposition as well as those likely to generate concern.

High on the list of so-called supported projects were those reducing risks to people and properties in the urban/wildland interface and in travel corridors projects that provided more habitat protection for threatened and endangered species, fuel breaks, and projects for biological assessments providing a foundation for management prescriptions.

The kinds of projects that were likely to engender controversy and of course challenge included those that might occur in roadless areas, old growth forest, and riparian and so-called single purpose project.

I run through this litany, Mr. Chairman, because it is clear while there is widespread support for efforts to reduce the risk of wildfire to people, properties, and valued ecosystems, there clearly remains a fear this will become an excuse to go back to the ways of the past, where timber targets dominated and performance was measured in board feet rather than multiple use accomplishments.

Let me assure the committees and our critics, Mr. Chairman, our objectives in initiating this forest health project are as Chief Thomas stated in the field hearing in Boise this past August, to ensure ecosystem health in order to provide the foundation for all life. Forest health is about the growing awareness that human activities over the past century have had some undesirable effects and these effects are now becoming very apparent.

The size and severity of recent wildfires and pest outbreaks have altered our forest ecosystems. We find ourselves in a unique situation here, I believe, where we can improve the health of our natural resources, restore them to some semblance of their basic ecological processes, improve public safety, and reduce the risk to life and property, and generate a product which has an economic benefit to individuals and communities and save the American taxpayer money. That sounds like a winner to me, Mr. Chairman.

Clearly, we need to restore the public's trust in our ability to manage the forests and restoring them to health. We need to identify means to operate more efficiently, and we need to work more closely with other Federal, State, and local agencies to accomplish this. But I believe, Mr. Chairman, we have come to one of those situations that I would best characterize like that of the classic

Fram Oil ad, "You can pay me now or you can pay me later." We have the knowledge and skills to do what is best for American forests for public safety and the American taxpayer. I believe we should proceed to do so, and it is our intent to do just that.

In fact, I am in the process now as we review the report of this task force of looking at the opportunities we have to make investments on landscape and looking at particular projects that we might implement in Idaho, and eastern Oregon and Washington, as well as in northern California, some of the areas that have been highlighted in the past as areas of concern, and in addition, we are looking at resources we might be able to invest, and we will consider the use of existing transfer authority the Secretary has to move resources within the existing budget into this forest health initiative. In addition, we are also looking at ways to use carryover funds from our fiscal year 1994 budget to accomplish the same end.

I want to thank you, Chairman Miller and Chairman de la Garza, for this opportunity to appear before the committees today, and I want to assure you again that as soon as the Western forest health team report has been finalized, we will make copies available to you and the other Members of the committee. Thank you.

Chairman MILLER. Thank you.

[The statement of Mr. Lyons may be found at end of hearing.]

Chairman MILLER. Chairman de la Garza.

Chairman DE LA GARZA. Thank you, very much, Chairman, and I thank the witnesses for being here and for your excellent presentations.

I remember one of you mentioned, I believe Mr. Armstrong, about the work of a coordinating group. My question is, is there a plan in place, Federal, State, and local, as to how you fight and/or manage the fighting of wildfires in the areas where you have either private, Federal, or State forest lands? Is there a plan in place now that you can say, we will use Plan A or Plan B?

Mr. LYONS. There is, Mr. Chairman. In fact, firefighter efforts are probably among the best coordinated Federal activities that we have. Whether a fire breaks out on State, private, or public land, efforts are coordinated through an interagency team. And, in fact, we have MOUs in all 50 States to work cooperatively to fight fire.

Firefighting efforts are coordinated and centralized through an interagency team that is established in Boise, Idaho, and that team allocates resources based on needs with regard to the particular project or a particular fire. It is probably, as I said, one of the best examples of interagency cooperation between the State and Federal level that exists. In fact, it is a model I wish we could apply to some of our other management activities.

Chairman DE LA GARZA. Is there a head? Who triggers the action? Is there one person or one group that triggers the activity?

Mr. LYONS. Actually, the request would come in from an individual State or from a locality and would be coordinated through the interagency team in Boise. I could turn you over to Joan Comanor, who is responsible for those activities for us in the Forest Service and she can elaborate on that.

Ms. COMANOR. As Secretary Lyons said, we do have agreements with all 50 States, and depending on where a wildfire is reported to occur, we have agreements on who is responsible for initially at-

tacking regardless of ownership. It is based on the presence of either Federal resources or State or local resources.

So we do have agreements so that as soon as a fire is reported we are able to muster forces to deal with it in accordance with whatever the prescription, the agreed upon prescription for the areas that have been developed.

So we have a network, we have a pre-agreed upon approach, and we have agreements on the level of activity that should be addressed to each individual outbreak.

Chairman DE LA GARZA. Is there a person with a fireman's hat with a star on it that says, let's go?

Mr. DOUGLAS. Mr. Chairman, if I may add to that. It is not unlike your normal neighborhood fire department in which there is a fire in the house or a commercial establishment or something and the fire department responds. The fire department in the wildland responds as well, whether it be a BLM district or whether it be a park or whether it be a State or a county jurisdiction. They take the first steps to try to suppress that fire. If they need help, we have a number, as has been referred to earlier, a number of mutual aid agreements and contracts and other agreements which allow additional support to come in culminating from national level support from Boise.

But it is just like fire protection in your neighborhood in which there is a local fire department. It may be called something different in the wildland which does the initial sponsor, the initial attack, responds with an engine or a crew or whatever is necessary and adds more resources as resources are necessary, and those resources can come from other Federal agencies, from State agencies, sometimes from local jurisdictions. They are all prepared together, they train from the same book, they use the same standards, equipment, and so on so that everybody meshes at the fire no matter whose agency they work for.

Chairman DE LA GARZA. Does that plan include funding? Who funds what part? How much? Is there an MOU with the States?

Mr. LYONS. When the fire is actually being fought, Mr. Chairman, an effort is made to determine the costs that are allocated based upon the lands being protected. So, for example, there are costs accrued to a fire involving forest system lands and private lands, then an estimate of the cost for fighting each element is allocated in that way.

Funds are provided through appropriations, of course, to support firefighting activities for all public agencies as well as through cooperative fire assistance program to the States. And so we assist the States in covering the cost of firefighting.

In addition, in those situations where outbreaks are substantial, FEMA provides additional funding support to aid the States in dealing with fire suppression and restoration efforts.

Chairman DE LA GARZA. If you were to divide it, let us take California, what percentage of the cost, if you can ascertain it, was paid by the Federal and what percentage was paid by the State and/or local? Contributions, firemen, fire trucks, et cetera.

Mr. LYONS. I don't know if I can give you an accurate answer on that, Mr. Chairman. It depends on the land base involved. But we

can certainly get you numbers from last fall's numbers to get you some information.

To respond to your question about who wears the hat. I think what is unique about the firefighting efforts in this interagency approach is that the hat can be worn by a county firefighter, by a firefighter, in the case of Southern California from the city of Los Angeles, by someone from the Forest Service, the Park Service, the BLM, wherever. It is truly a coordinated and integrated effort.

Chairman DE LA GARZA. Is there a scientific reason why more fires seem to occur in the West than in the Northeast or the South?

Mr. LYONS. I think I would answer that by saying changes in forest condition exacerbated by nearly 10 years of drought have created a situation which increases the likelihood of fire. In addition, many fires continue to be caused by man, and as a result we have had an increasing problem with firefighting not only in the West but also in the South.

I think more attention clearly is paid to fires in the West because of their spectacular nature, but we have fire problems throughout the United States. The season just varies from time to time and of course we are coming on the season for Southern California now.

Mr. DOUGLAS. I would just add to that that the vegetative types and the climate in the West generally contribute to the fire conditions more than, say, they do in this area, but to echo Secretary Lyons, the South is an area that is extremely fire dependent, gets a lot of fire, depends on fire for the health of those ecosystems down there, and one that does not generally carry as much attention as the West does.

Chairman DE LA GARZA. I thought it was because California fires air better on the six o'clock news. Thank you, Mr. Chairman.

Chairman MILLER. Thank you, Mr. Chairman. Let me follow on to the questions of Chairman de la Garza.

We have agreements, apparently from your responses to him, on how we are going to fight these fires when they break out in various areas and within the different jurisdictions when a fire occurs on State land, park land, or local private lands. That is in place.

But, as I understand your testimony, and in reading additional documents, those agreements really do not go to the responsibilities of the parties for due diligence on their individual lands—a homeowner, a city—as to what they should be doing to mitigate and to minimize fire danger. They do not go to the questions of what costs will actually be shared in those events, and they certainly do not appear to go to the question of whether or not there is a reasonable assumption of a risk by people who want to live in some areas. And yet it seems to me that each of those components has some bearing on decisions on how a fire will be fought, what kind of resources will be dedicated to it, what the urgency is, what the priority of that fire is, if you have many, many fires going in many areas, the impacts of possible loss of life, properties, and what have you.

And yet, if you fly down the spine of the Sierras, or if you go up next to Rocky Mountain National Park, you will see communities and subdivisions, minor subdivisions or individual homes, that are right up against the boundary, and how do we apportion out those? Are we asking the people to carry insurance? Are we asking roads to be sufficient where roads are in those areas for evacuation and

for the access of firefighting equipment? Are those conditions now imposed or where are we on that?

Mr. ARMSTRONG. I touched on that a little bit in my statement, Mr. Chairman, that as we have people moving out of the urban areas and into the wildlands more and more, it causes this interface problem, which we call it. And our people are neither trained nor equipped to deal with a house fire, and occasionally we have situations where somebody says, well, the BLM people went right by the house that was burning on their way to a fire that was out in the wildlands. And those are unique situations but that has happened.

One of the problems is that they are not equipped nor trained for that sort of fire, and, I suppose the answer was that they should have called "the fire departments." But, obviously, these are things we need to deal with as we have this interface increasing. We are.

And I would like to take just a moment to invite you to come see the Boise operation. It is new, it is more state-of-the-art than we have ever had before. It is developed to do the coordination so that you put your resources where the problem is, and this involves major aircraft ferrying of people.

Chairman MILLER. I understand that. My concern is that prior to the fire, are we looking toward a process where we work with counties and/or States or cities or individual landowners to start discussions about what the limitations are and what we can and cannot do on Federal lands and what we expect others to do if Federal resources are going to be used to fight fire?

Because you would address a fire, I assume, differently or—at least your actions have different political implications—if structures are likely to be involved or not be involved, and yet we have very little say about much of this growth that is taking place on the boundaries of Federal lands. Yet we will catch hell if we do not respond with every Federal mechanism available to us to prevent some kind of harm coming to those lands.

Are we starting to rethink the interrelationships here between these local jurisdictions of government in terms of prevention and mitigation prior to this coordinated effort that is run out of Boise?

Mr. ARMSTRONG. My answer is, I think we should.

Chairman MILLER. But are we?

Mr. LYONS. Yes, we are, Mr. Chairman. I think the L.A. fires did a lot of good for bringing that issue to the public's attention, if there is any good that came out of that disastrous situation.

There has actually been an effort under way for the past few years through the National Wildfire Coordinating Group to try to begin that dialog. And you hit on some of the keys that have to be addressed most especially working with the counties so that the counties can understand what role they can play in helping to reduce risks to communities to new developments associated with wildfire. Things like changes in building codes to eliminate cedar shake roofs; to require brush be kept away from the foundations of homes; to ensure that cul-de-sacs and rights of ways and access into these developments are large enough to allow fire equipment to enter should a fire situation arise.

The difficulty we have is homes are being built in areas that are usually fire-prone and in which fire is a more natural part of that

ecosystem than people. As a result of that, it has been very difficult to affect changes in people's attitudes. Obviously, our ability to use prescribed fire in those areas is now severely restricted, if not eliminated. So we have to develop some sort of working relationships with the communities and with the counties to achieve that goal, and we are seeking to request that.

I concur with Bob's concerns about trying to work with the insurance industry to suggest that there are relative risks here that may exceed our capability to provide protection. We have had some discussions with the National Home Builders to talk about the need to look at some of these fire code issues and to address those.

In terms of our response on public lands where homes are being built up against the public land boundary, we are doing the best we can to reduce fuel loading, and that was one of the areas identified by our team as a priority, to reduce fuel loading in those areas where the risk to life and property may be extremely high because homes are built right up against that wildland interface. But it is an initiative that is just now under way and there is a great deal more work to be done, but projects are already being implemented to achieve that.

Chairman MILLER. Thank you. It is the intent of the Chair to recognize Members the best that he can in the order which they arrived in the committee and to use the five-minute rule. There will be a second round of questioning. I think Mr. McInnis, Scott, you are next.

Mr. MCINNIS. Thank you, Mr. Chairman.

Mr. Armstrong, as you may or may not know, I was personally involved in what you called the South Canyon fire. For your own personal information, it was not South Canyon; it was Storm King where the fire was. South Canyon is actually across the river.

I want to relate one story to you in hopes that my personal appeal to you will bring some results, because my personal appeal to other officials in your agency apparently has fallen on deaf ears.

One of the victims of that fire was a fellow named Levi Brinkley, and it was a tradition in their family that they pass down through the generations St. Christopher medals. When we brought Levi off the mountain, he had the St. Christopher's medal on him. That St. Christopher's medal was removed by the coroner and put into a personal effects container to be turned over to the family. Your agency took custody of that container and then misplaced the container.

Needless to say, we have a family out there that has already got a horrible tragedy they are dealing with and are receiving no response from your agency as to the misplaced St. Christopher's medal. So my personal urge to you, Mr. Armstrong, is that you find somebody in the agency that can go find that container of personal effects and have it turned over to the family. I think that should be a very high priority with your agency.

I would also be curious in regard specifically to the Storm King fire. There was one individual with the agency who refused to sign the report, and I cannot find anybody and have not been able to contact that individual who will explain why he has refused to sign the report.

And, very quickly, Mr. Lyons, you speak very proudly of the coordinated efforts, but on the Storm King fire, there are allegations that, as you know, this fire—or you may not know, but this fire was lightning. I actually saw it on the first day that it occurred, and the fire continued to burn for two or three days before the agency put resources on the fire. That, I can understand, because we had many fires going at one time and your resources were stretched very thin. We had fires which seemed to be much more dangerous than this fire. But, nonetheless, some of the local fire departments have alleged that when they volunteered to go up onto your property, to our property, and put that fire out, their services were refused.

So you have spoken, Mr. Armstrong and Mr. Lyons, about the coordinated efforts between the Federal and the State. My question would be, how extensively have you reviewed your MOUs with local fire department agencies and are you going to make any change in direction as far as their utilization of resources, especially initially until you can get resources into the fire?

Mr. ARMSTRONG. Let me address your first comment first.

I was on the ridge where that fire occurred Friday. I was with the person who was there and made it out who told me a lot about what happened. There is no way to understand that from reports and pictures, in my judgment. That is close to being as educational as being there when it happens.

The second thing you could do is be there after it happens and take a look at it and see what they were up against.

In the process of that meeting, there was a continuing questioning of the people who were there about what had happened to the St. Christopher's medal and had anybody found it. So let me assure you they are trying to find it. I do not know what happened to it nor did they, but as late as last week they were trying to do that as best they could.

Second, let me say that I am not sure about any of those facts because there are people here that are far better able to address that than I, so I think I would let them answer that question about the coordination between the local people.

Mr. DOUGLAS. With regard to the question about the gentleman who did not sign the investigation team report, I am serving on a subsequent team which is putting the findings and recommendations of that report into a corrective action plan, which we will be sitting to direct Dombeck and Chief Thomas in in a couple of weeks. In the course of our discussions within that management review team, we have talked extensively about the gentleman's concerns. He has provided us with some information about his concerns.

I think it is necessary to talk to him personally to get the full sense of his concerns, but I will try to summarize them, which are that, and I hope I am not being unfair to him. He comes out of a research community. He is a researcher. He spent his career essentially working on these issues of fire shelters and so on. He had a general level—has a general level of discomfort with some of the precision of that team's report, felt it needed to have more time to be spent to go through fact—check some things, go through some peer review, and so on. He views it through the prism of his career,

which is as a researcher. Unfortunately, the team that put that together was on a fairly tight timeframe and they needed to produce the results.

So my sense is that it is largely a matter of different professional styles. I do not think, and I may be incorrect in this matter, but I do not think he disagrees with the fundamental conclusions and findings of that report. I think he has some concerns about associating his name with a document which he does not believe is just absolutely perfectly correct in all respects.

We can go back certainly and revisit that issue, and if I am incorrect I will provide you with more information in that sense, but I do not believe that disagrees with the findings and recommendations in there. It is just a matter of his approach to a project that is the fundamental problem there.

With regard to your last question, about the degree of coordination, I cannot speak to that specific point. I will have to find out more to talk about that situation. I will say, though, that we do have these agreements and plans and the matter of having integrated logistics, it does depend on everybody being qualified and having the right kind of equipment and support and so on to be up there. And, as you know from reading the South Canyon report, there was some concerns about not everybody having enough training as it is.

We will go back and look at it, but I would be concerned in those kind of conditions that we send up people whose hearts are in the right places but do not have the right kind of training or qualifications or support to be up there doing things. But let us go back and see what that particular offer was and why the local officials felt it was not something they could take advantage of that weekend and let you know on that.

Mr. DOMBECK. Let me add that one thing to the comments. The management review team that Mr. Douglas is a member of will be looking into those sorts of details in depth and those conclusions will be provided to me and Chief Thomas, I believe next week or the following week. So we are looking into that in great detail.

Chairman MILLER. Mr. DeFazio.

Mr. DEFAZIO. Thank you, Mr. Chairman.

Mr. Lyons, a number of times through your testimony you refer to a combination of salvage logging, reducing fuels through mechanical means, prescribed fire and thinning of densely stocked stands.

Now, I believe you are pretty familiar with what the forest on the east side of Oregon looks like. I know I am. I spend a lot of time out there even though it is not my district. They are a mess. There are places where mortality is more than 50 percent, and what you get is something waiting to become a giant torch.

Now, I guess the question is, is it more desirable to burn it all down or is it desirable to start over and to go in and begin these activities? Because I have been hearing this same litany from the last administration and this administration for as long as I have been in Congress. Yes, we know that there is a catastrophic situation in eastern Oregon; yes, we are worried about the mortality, and we will do something.

A few years ago we were going to pass some legislation to require some expedited salvage and we were told at that time by the Bush administration it was not necessary. It was so high on their list it was going to go forward. I think we have had some conversations sometime ago about moving ahead with some of these programs over there.

It is a miracle that eastern Oregon did not go up like Idaho and Washington. It was pure chance. We did not get the lightning strikes or something. We had a few fires, but it did not all go. But next year it could if we do not break this drought cycle. When are we going to get to it?

Mr. LYONS. Well, Congressman—

Mr. DEFAZIO. We have another study that is already late and I am just curious, are we going to have anything happen after this study or will this study lead to yet more confusion in the ranks of the Forest Service in the field.

Mr. LYONS. I certainly hope we can avoid confusion in the ranks in the field.

Mr. DEFAZIO. They have been confused because they cannot get any salvage sales done.

Mr. LYONS. I think part of the problem we face immediately is getting people and resources on the ground to get the job in preparing those salvage sales. The report that this team generated has identified some ways in which we can expedite some of the activities.

We, frankly, have most of our work force in the West, including some retirees who we have hired back, involved in fighting fires. So there will be some start-up delay there in actually trying to move forward with sales this time around.

I agree with you completely, the delays have been unacceptable. And I think now, with hopefully additional public support for a forest health program that will allow us to do some of the things in salvage we need to get done, we will be able to move forward.

We need to clearly identify what our priorities are and certainly reducing fuel loading should be a priority if we are to maintain the health of those ecosystems we are entrusted to manage.

Mr. DEFAZIO. Well, what do you identify as barriers? I think that the Congress would be receptive even in these tight budget times. What are you identifying as barriers?

Mr. LYONS. There are a number of administrative things we can do, Congressman, that will help our plight. I think we have continually requested increased funding for salvage. Through appropriations, we received additional dollars there. We need some more flexibility in how we use those dollars on the ground, and we can do that, I think, by changing some of the rules in which we allocate our funds so that we do not find ourselves in a situation where dollars that may have been allocated to timber sale preparation can be used for fuel reduction, because that was not the account in which the dollars were placed. So we are trying to address some of those immediate concerns.

We are trying to come up with mechanisms to expedite the preparation of environmental impact statements and documents that would allow us to prepare a number of sales. We are trying to work with our sister agencies in ways in which we can expedite any

other reviews that may be necessary so that we can get sales up and running.

As you know yourself, this is true on the West side as well as the East side. There has been a lot of controversy about harvesting some of this timber, and we have invested a great deal of time and effort in the last two years to try to engender more public support and understanding for what it is we are trying to accomplish. So, hopefully, we can proceed in a way that is less controversial and that allows us to finally get things done on the ground, and I think we are making progress.

Mr. DEFAZIO. Well, two points. One is the confidence of people in the agency. There were some allegations, you know, of some ranger districts or forests using salvage sales to go after green timber. You have to get to a level of confidence where people know this is not an excuse to go into areas where you would not otherwise go in.

There is a number of issues about, well, this area is certainly a roadless area, and other sensitive areas, but there is a vast acreage which is not in roadless areas where you could at least get started before you start looking at more controversial areas and whether it would be desirable to go forward. I am concerned that we are hung up here. And from what I saw of the devastation in Idaho, it is not more desirable in anybody's book to let it burn down at catastrophic temperatures that sanitize the soil and then, as you described that one watershed in Washington, where you will have to invest millions just to stop slope slumpage in the short-term.

I do not think the most radical leave-it-be type in the world would say that looks better than if we had gone in and done some selective salvage in the area.

Mr. LYONS. I could not agree more, and that is why we want to make the investments as soon as we can. And we are finally I think to the point where there is a consensus on the types of project we should be able to implement, and certainly those that protect life and properties and critical resources are ones where hopefully we will be able to get the support and funding to get the job done. We are committed to moving resources, dollars into preparing those types of projects as soon as possible.

Mr. DEFAZIO. My time has expired. Thank you. Thank the Chairman.

Chairman MILLER. Mr. Smith.

Mr. SMITH OF OREGON. Thank you, Mr. Chairman. I yield to the gentleman from California, Mr. Herger.

Chairman MILLER. The gentleman is not recognized for that purpose. We are going to go through Members of the two committees for questions.

Mr. SMITH OF OREGON. After the Members are through, could we—

Chairman MILLER. We will address it at that time.

Mr. SMITH OF OREGON. Could we address it to Mr. Herger?

Chairman MILLER. I will wait and see where we are in the hearing at that time. Members of the Agriculture Committee have left and indicated they will be coming back. As Members of the committee, we have an obligation to have addressed their questions.

Mr. SMITH OF OREGON. I understand that, and I shall wait as well, with Mr. Herger.

Mr. Chairman, I have a statement I would like to present for the record for Mr. Allard.

Chairman MILLER. Without objection.

[The statement of Mr. Allard follows:]

STATEMENT OF HON. WAYNE ALLARD, A U.S. REPRESENTATIVE FROM COLORADO

Thank you, Mr. Chairman. As everyone knows 1994 has been one of the worst years in recent memory for the number of forest fires in the west. While I'm no expert on Federal practices of forest fire prevention and intervention I know what my constituents have said following the tragic forest fires we suffered in Colorado. They want to know if we couldn't prevent these fires from happening or if we couldn't at least ameliorate their effects in a way that would have saved monetary damage and more importantly could we have done anything that would have saved the lives of the firefighters?

I have before me copies of documents from the Forest Service and the Department of the Interior on ways to better protect our Federal land from fires, pests, and other afflictions that could harm our public land. While this information is helpful, what would be more helpful is a list of actions that the Administration could take through Executive Order and action that requires Congressional action. If there is action that could be taken immediately by the Administration we should begin that process now.

Also, yesterday Congress passed the legislation reorganizing the Department of Agriculture. In that legislation we mandated that the Secretary of Agriculture submit a report to Congress no later than March 31, 1995, detailing how he or she plans on reorganizing the Forest Service. In conversations with former Secretary of Agriculture Ed Madigan he told me that before he left office he had a plan to organize the Forest Service that was 80 percent done. While I recognize that is a program function perhaps Mr. Lyons could tell us if part of this reorganization plan could address how we could enhance the Forest Service's fire fighting capability? Since Mr. Madigan did the heavy lifting on this issue, addressing how the Agriculture Department could enhance their firefighting capability shouldn't be an unreasonable request.

Again I would like to thank both Chairs for holding this hearing.

Chairman MILLER. Mr. LaRocco.

Mr. SMITH OF OREGON. Excuse me, Mr. Chairman.

Chairman MILLER. Oh, you have questions. OK, Mr. Smith.

Mr. SMITH OF OREGON. Mr. Chairman, we have listened to the presentation from the Forest Service and the BLM and there is no doubt these issues have been with us for some time but we have lost everything. We have lost the ability to harvest trees, even dead ones. We have lost lives and we have failed in fire suppression, and now we are sitting around and wringing our hands trying to point the blame on somebody, some agency, who is responsible, who is not responsible, and it is a sad and disgusting situation that we all face.

And it is no wonder people become upset with their government, especially when they see how timber is managed in this country, and especially in the West, where currently you talk about wildfires destroying millions of acres.

We also have, we have discussed many times in four forests in the eastern part of the State of Oregon, we have 3 billion board feet of dead timber standing we cannot harvest, we cannot take out. And it is no wonder that people are disgusted with what they see happening. We have watched the Jack Ward Thomas plan of setting aside 9 million acres of land for the spotted owl, and much of that timber is dead, much of it cannot be salvaged.

We talk about forest health when we have in some forests in my part of the country, and I am sure many others, 250 tons of dead material on the ground per acre and you do not fight fires that way, just get out of their way, and this is a high elevation area. There will be fires every year because there are lightning strikes every year whether we have a dry year or not.

People wonder why there are more fires in the West. It is simply because there is more timber in the West. We furnish 50 percent, or did, of the soft woods in Oregon and Washington to this Nation. We do not do that anymore. Eighty-five percent of the harvested timber is shut down on public lands, and then we sit around and wonder why we have wildfires that destroy millions of acres. Well, the facts are we have failed.

We have many studies going on. The Blue Mountain Resources Council is one that we all participated in. It is shut down. We cannot follow the recommendations of our experts and that is a shame.

So all the things about restoring, quote, and protecting the health of American forests is a failure. Now, from this point on we should be doing something about it.

First question, Mr. Lyons, I have here a letter from one of the operators in eastern Oregon who says to me, you must get ahold of Mr. Lyons. The east side screens—you know those—are eliminating the opportunity to thin salvage and reduce fuel load reductions on east side forests. People may not be aware of that fact.

What are we doing about it, eliminating the east side screens, Mr. Lyons?

Mr. LYONS. Well, Mr. Smith, I will be glad to answer your question. If I could, though, I want to just comment on something you said initially about the public's concern. I think you used the term "wringing our hands" over the situation we face and you mentioned that we had failed in fire suppression.

I want to point out that we have contained 98 percent of all the fires that were initially started this year, which is actually 1 percent better than we did last year. The 2 percent we did not contain obviously became some of the large fires that we had to deal with. And contrary to your statement, I would argue that our firefighting efforts and the efforts of agencies of government at the Federal, State, and local level in that regard, are probably one of the more outstanding examples of what government can do to serve the public. And I think if you went and talked to folks in Glenwood Springs, Colorado, or in Leavenworth, Kansas, or Lake Chelan Washington, or towns in Idaho, some of the towns saved by the efforts of the firefighters who were out there on the ground doing their best to protect lives and property, I think you would find those towns are most grateful for the efforts of those agencies and for the efforts of their government, and they are very pleased with what we have done.

Mr. SMITH OF OREGON. Mr. Lyons, I have talked with Levi Brinkley's parents.

Mr. LYONS. Levi Brinkley's parents came to visit me two weeks ago.

Mr. SMITH OF OREGON. Just wait a minute. I let you speak, now let me speak.

Mr. LYONS. Yes, sir.

Mr. SMITH OF OREGON. I have talked with some of the parents of the kids that were burned up in that fire in Colorado. Several of them were from eastern Oregon; one from my hometown, in fact. In fact, I have known the Brinkley's all their lives and have known Levi Brinkley since the day he was born. They do not quite agree with you, and I do not agree with you either.

The point is that we have, through a forest health policy, identified the problem but we have not done anything about it. That is why we have buildups; that is why we have 3 billion feet of dead timber standing; that is why we have fuel loads on the ground that burn people up. We cannot fight those fires; we have to get out of the way.

Mr. LYONS. I would suggest, Mr. Smith, that we are doing more than any previous administration has been able to do in trying to move forward to address the fuel loading problem that we obviously have, and I want to point out, Mr. Smith, that I had a visit as well from Levi's parents, and they expressed a great deal of concern to me about the need to get at the forest health situation that we face, and I could not agree more.

Chief Thomas and I, who had the unfortunate opportunity to go to Colorado the evening of the catastrophe that occurred there, committed to try and ensure that the lives that were lost up there will not be lost in vain; that we will bring attention to the forest health situation that we face, and I think that is consistent with the wishes of Levi's parents. It is certainly consistent with our goals and objectives to try to address the fuel loading situation to reduce the risk of wildfire in the future.

But I want to point out, as far as fire suppression goes, nobody does it better than the agencies that are involved in doing so. We need to do more to provide them support, not in any way to question their capabilities.

Mr. SMITH OF OREGON. I am over time.

Mr. DOUGLAS. Congressman, if I could just expand a second on the point Secretary Lyons made, and we can share this with the committee. We have pulled together some statistics about suppression, and around the upper 90's, 97, 98 percent of all fires are suppressed at less than 100 acres, and over 90 percent are suppressed at less than 10 acres.

So while we have some big, disastrous, costly, in many terms, fires that occurred in this past year in particular, the real heroes of the fire suppression efforts every year, particularly in 1994, were those initial attack foresters out there throughout the West and throughout the country that caught those fires when they occurred and caught them in a day or two's time and did not allow them to become huge disastrous costly fires.

We can talk about what we can do to prevent even more from occurring but I think we need to recognize the contributions that those people have made on the ground to keep even more from becoming that size.

Chairman MILLER. Thank you. Mr. LaRocco.

Mr. LAROCO. Thank you, Mr. Chairman. This is a very, very important hearing and I appreciate the fact that the administration is here to lay some things on the line.

I have been one Member of Congress who has tried to advance the forest health ball down the field and I admit some frustration but I think we are making some progress. I have tried with Chairman Miller and the Agriculture Committee to advance legislation, and even though we do not have a bill signed into law, we have a very important hearing record that has developed into a scientific consensus and I think some policies that are about ready to be implemented on the ground.

Now, we have to stop meeting like this, though, and having these hearings. There is an important element, I might add, Mr. Chairman, to forest health, and it is represented right here by my watch; it is called time. We recognize that time is passing us by. There is a scientific consensus that says we must act on the ground. We all know it, it is common sense, that in the post-forest fire phase, we must get in and make decisions on the ground, and with this time ticking along and the clock ticking, there are enormous challenges and enormous opportunities for the agencies involved. And I hope that we are up to this.

Now, I must say, I am optimistic. I was born that way. I wake up every morning and say this glass is half full, not half empty. But it is up to this agency and administration to prove this genetic pool of optimism I am part of is correct; otherwise, you will turn me into a raving Congressman that seems not to be able to get anybody's attention on this issue.

Now, what we have to do is act on the ground and, Mr. Lyons, you have said that the proposal is now before the chief on the team that you have formed. I am hopeful that we can get something done. Perhaps you can elaborate on that, that is one question, for what the projects are going to be in Idaho.

Now, the other thing we need to do and the questions my constituents are asking out in Idaho, as the fires are still burning, is, what are we going to do on the ground. The people in the know and the people I respect of all stripes say we have to have some timber sales and we have to have some action by June 1995.

Now, how are we going to do that? Are we up to it on the ground? Are the forest supervisors up to it? Are you giving them the tools to do this? Will we be able to deal with NMFS to get the clearances we need? Will we be able to keep the environmental laws intact and make sure the environmental laws are protected but get some volume out? What are the policies in getting into the roadless areas and get volume out of there like you did in the Boise National Forest?

So my first question would be, if we can run through a few questions, if you can elaborate briefly and tell us some secrets that are in the report that you have reviewed that is on Chief Thomas' desk. That would be helpful to me and my constituents at this point. They would expect the administration to come forth with some recommendation at this point.

Mr. LYONS. Before I let out any secrets, Congressman, let me point out that we are committed to trying to move forward as quickly as possible, and I think we want to do so in a common sense way. We want to identify, as Congressman DeFazio pointed out, those areas where there is going to be less controversy first.

There are plenty of opportunities out there. You view it from that sustained point that we should be able to get into those areas. We have asked for additional moneys for salvage operations this year, for thinning and other vegetative manipulation to get at some of those opportunities. So that is one of the first things that we are going to seek to do.

In terms of some of the recommendations of the report, one of the areas they know you are very interested in that the team felt would be a real help to our efforts is in exploring and expanding the use of land management service contracts. There is a great deal of interest in using that approach, which of course is different from the use of KV, because we are actually enlisting a contractor to provide services in return for timber to accomplish some of this fuel reduction.

Mr. LAROCO. Basically, the administration is in favor of the stewardship contract concepts.

Mr. LYONS. Generally, we believe it is a good concept.

Mr. LAROCO. At this point, Chairman, it is good to hear this because at the Ag Committee hearing the other day Gray Reynolds testified in favor of the concept, which I think is worthwhile to move it along.

Mr. LYONS. I think it is an important concept. I think there are other concepts we want to explore as well.

Mr. VENTO. Concept exploring.

Mr. LAROCO. I hear the concept word here. We have to get something off the ground here, and that is my concern.

Mr. LYONS. No, I think it is certainly something that we want to continue to promote and we are working with you and your office, as you know, to try to accomplish that.

There are other mechanisms we need to use. We need to be more efficient in how we work with the National Marine Fisheries Service and the Fish and Wildlife Service on consultations and come up with mechanisms to expedite consultations.

We want to operate in a manner consistent with our overall ecosystem goals but we want to do so in a way that allows us to take advantage of the opportunities that exist out there to improve forest health, reduce the risk of catastrophic wildfire, and ensure the sustainability of the ecosystems that we are managing.

Mr. LAROCO. OK. Now, we have the clock ticking here on the Payette National Forest and Boise where the fires have been. I am hopeful that within this historical range of variability—you have mentioned twice in your testimony—that we can get on the ground there and deal with these areas. I am getting good reports and am here to tell you that it is bubbling up from the rocks.

My environmental friends in the State of Idaho are impressed at what is going on in terms of the planning already taking place in the Boise and Payette National Forest. They are impressed with what they are hearing. My friends in the timber industry are wary, but they also think there is an opportunity to get some volume out there and keep these watersheds intact, not get in there with massive road building projects because of the economics that look good there.

But June 1995 is an important date to make sure we do this without any delays.

Mr. LYONS. I recognize that and I think it is important that we proceed as rapidly as possible. As you point out, the economic conditions I think increase the likelihood and the capability to do some of these things because the stumpage is so valuable. We do not need to build new roads; we can use helicopters and other approaches to minimize the environmental impact.

If the timber industry and environmentalists would sit down or go out in the field together and look at places where investments can be made, I think they would find ample opportunities to work together to try to produce timber and improve forest health and reduce the rhetoric and the controversy we have had in the past.

Mr. LAROCOCO. My time is up, but I would just like you to say, do you regard this as an opportunity to show that the government can work on the ground and is there a commitment in this administration to really see if we can implement ecosystem management, restore forest health, and move in after these fires and do the right things?

Mr. LYONS. I would agree.

Mr. LAROCOCO. Thank you, Mr. Chairman.

Chairman MILLER. Mr. Vento.

Mr. VENTO. Well, thank you, Mr. Chairman. I have a lot of concerns about this. We are talking about this forest health issue and I was looking at a CRS report on forest health and the cost of what it is. Basically, most of the forest health issues Assistant Secretary Lyons and Armstrong portrayed, at least in the last statement to my friend from Idaho, Congressman LaRocco, as economic. But the CRS says the cost of treatment of 14,000,000 acres is \$3.5 billion, which is in excess of the Forest Service and BLM budgets for these purposes combined.

Mr. VENTO. To deal with 14 million acres of forest health, I mean, what we are on here is, is this going to be the driving force for policy? I think what is needed here is maybe something more dramatic than what I have heard so far.

I think you are suggesting that this will cause a change of all the forest management plans again and trying to deal with the other varied factors and responsibility even to change the BLM resource management plans. To deal with it, if we are going to effectively deal with this and as the driving force behind the timber and other programs have sometimes been the economic stump to prices and other factors, including the endangered species, watershed protection, and other factors, I think it takes something rather more dramatic than what I have been hearing on this side.

I don't have a lot of time, so I have got to be rather blunt. I might say I have been to the Boise Interagency Conference. I agreed with that. I agreed with the bill we passed some years ago cooperating with Canada. We get lots of people from Minnesota because we have had wet years in the Great Lakes.

I regret very much the loss of life and I might say my understanding about Storm Canyon, incidentally, had nothing to do with thinning, just like the chaparral burning in California doesn't have to do with thinning.

I think there is some treatment that can be done but this isn't a salvage question, who is going to go in and salvage Gamble Oak.

I mean, the point is to lay that on the Forest Service or the BLM or anyone else at this point, I think, misses the point.

I am very concerned about it and I don't know that we get a lot better techniques, but my concern here, the question is really to Mr. Lyons and to Mr. Armstrong, Assistant Secretaries both, is: Do we really need to reframe the whole forest timber program to in fact focus on this forest health issue if we are going to realistically deal with it as a part and parcel of the fire fighting efforts that we are making?

One of the problems is, we have effectively fought fires to the point where you have got the buildup, and so when you get the fire—I mean, this is, I guess, what I understand why you get these catastrophic type of events taking place, so the fact that you are successful in terms of a small way, you end up with a big problem in terms of buildup. That is certainly what happened with the Yellowstone fire.

There isn't a question here whether we are going to control or not control it. I mean, these are fires, they are within modicums of a certain type of control, so are we prepared to change the whole timber program and the management programs to in fact deal with this forest health problem because it will take no less than that?

Mr. Armstrong and Mr. Lyons.

Mr. ARMSTRONG. Let me take a cut at that first and then let some of these people who are far better experts than I deal with it. One of the things I alluded to and certainly that Mr. Lyons alluded to is this theory, are you going to pay us now or are you going to pay us later, and should we start thinking about the possibility of prescribed fires to get rid of some of this fuel situation that has built up over the years?

In some instances, because we are so successful with what we do to put out fires and so we can get them early, and there are a lot of areas which they tell me should be burned and should be burned regularly and historically were burned regularly, but we don't use that as a tool, but if you do the prescribed burn, which is a risk, and you do it early or if you do it at a time when conditions are such that it is controllable.

And that is the problem. These fires are in Idaho that we deal with, according to Governor Andrews, who tells me they are having the largest drought they have had in his lifetime so the fires are out of control. Maybe we ought to be burning in some other areas. All we are saying is, should we be dealing with this? Should we be taking these risks? And we think that there is some evidence that perhaps we ought to look at our whole situation, including the use of fire anew and see what we can do.

Mr. VENTO. Let me interrupt you because I don't have a lot of time. I hear what you are saying. I know there is a lot I have laid on the table. I did state Storm King Mountain or South Canyon. My canyons and mountains are mixed up.

Mr. ARMSTRONG. I would say Storm King would be the appropriate thing and was in my testimony as South Mountain and it shouldn't have been.

Mr. VENTO. My point, that it was a noneconomic type of timber. It pointed out that in California, the numbers here, I see the CBO numbers \$3.5 billion to treat 14 million acres of the California for-

est has almost a million or is it a billion board feet, and a third of it is under contract as salvage and you can't get the companies in to remove it.

It is the old story saying we would like to have policy to be driven but we are trying to drive it by virtue of timber receipts and we can't get the companies to bid or perform on the basis of what we want to do in terms of tailoring the forest policy with regards to management itself and other things.

The other thing, Mr. Chairman, I just want to mention, and that is of course the residential and other dwellings. And the question here really isn't whether it is Forest Service land or private land or counties, what are they doing in terms of the permits? Do we need a system where the Forest Service has a voice in it because property and safety and health are the first priorities in terms of the forest?

We are fighting it on Forest Service land, but the primary goal of what we are trying to do is not the forest or the forest health but the protection of private property so the money might be spent on Forest Service land. But the fact is, we are acting in coordination and dealing with these particular problems over which we have no say in terms of what happens with regards to the nature of the residential land. Big deal, they are going to take the wood off the roofs. Well, that would seem axiomatic to me.

The point is, they ought to have water and other supplies. The question is: Should the Forest Service take the role as a residential fire fighter in the entire west or other regions in the country? That is the question that has to be asked.

I think we ought to coordinate. I think we ought to help and do what we are doing. But I think the question is: How do we deal with that when we have no voice in it? Can we rationalize what is happening in terms of residential and recreational development in these areas?

Thank you, Mr. Chairman.

Chairman MILLER. Mr. Farr.

Mr. FARR. Thank you, Mr. Chairman.

I would like to thank both the Chairs. I think this is indeed a very important hearing for this body to have.

I want to first congratulate the Forest Service on your good training practices. When I was in college, I served on a hot shot crew and was able to be trained on how to fight forest fires and it made me very sensitive to the forest ever since then. I am also experienced: 174,000 acres burned in one fire, in the Marble Cone fire followed by the Rat Creek fire which burned the property that our families have cabins on. Those cabins burned down.

I think the fire was the healthiest thing that happened there. The problem is, we had a tremendous fuel load built up from snow storms in the early 1970's on the coastal range, chaparral and oaks that have never been used to that fuel load, and the fire burned so hot that it blackburned a lot of the area.

From my experience, it seems to me that your objectives, your goals for the western forest health initiative are right on target. There are a couple of questions I have; one on fuel load reduction.

Will you be giving us a model of where you are going to do that that will be based on what Mr. DeFazio talked about, based on

where the highest risk occurs, where the priorities are for fuel load reduction and where is the greatest human contact? I don't think we ought to be spending money on essentially reducing fuel loads where you have green forest.

Second, I would hope the fourth part of your goal would be to identify administrative and statutory impediments to achieving forest health objectives in the context of ecosystem management. I think that is a very important aspect for this committee to examine because those statutory and administrative impediments may be far greater than the boundary lines of Federal property. It may go into State and private property as well. And I would hope that you would identify administrative and statutory impediments that State and local governments might have in allowing that ecosystem management to occur.

I know we started to address that in California where we have had 8,570 fires so far this year on local zoning ordinances, requirements that you have non-shake roofs or at least fire-treated shakes.

And last, I would like to have you address the issue of coordination of suppression. One of the things that I observed, and I know you are doing a better job of it, is we do seem to get tied up in whether the yellow truck, red truck, or green truck is the first one on-site. And if indeed you are developing an incident command, do you allow non-Federal people to be incident commanders on Federal land or Federal people to be incident commanders on State and private lands?

And can we work toward a better coordination and a most cost-effective coordination of the various suppression agencies?

Mr. LYONS. Congressman, I can answer the last point, the last question you raised. Our incident commands are multi-agency in structure. We do have non-Federal incident commanders who are working project fires for us now, are a part of the incident command structure so that interagency coordination is essential to getting the job done and we like to set up teams that have that multi-agency structure.

Mr. FARR. So as those teams build up, then your investment and the fire prevention won't have to be so reliant on just having more Federal facilities near Federal properties.

Mr. LYONS. The key is to make most efficient use of whatever fire fighting resources are available in the local area—and States like California have a tremendous fire fighting infrastructure, as you know—or to make the most efficient use of resources that might be brought in from other locations to help fight fires.

The incident commands are essential, though, because those teams train together, work together, fight fire together, and they can get on the scene and immediately go to work with very little loss in time which is, of course, critical in fighting project fires.

Mr. FARR. Is your task force going to identify the administrative and statutory impediments that might be there outside of the Federal Government?

Mr. LYONS. Well, to some degree, we will attempt to look at that. Obviously, there are thousands of county ordinances and State laws that could impact on our ability. I think I would rather focus

some on your comments about working with local jurisdictions and the efforts that we have under way to try to do that.

I think there we can accomplish a great deal by simply looking at fire fighting concern in a much more holistic sense and recognizing that fire, like ecosystem, has no qualms about crossing jurisdictional boundaries, and that is why we need to manage forests more effectively in that mode and we also have to fight fires efficiently as possible in that way.

Mr. FARR. My time is up. Can we do the fuel load reduction? Can you give us a list of where you are going to do that, those projects?

Mr. LYONS. We can generate a list of projects when we get to that point. I would point out it is really in reference to the comments made earlier by Congressman Vento. The CRS report identified the costs associated with dealing with all opportunities, if you will, for reducing fuel loading and improving forest health.

We have to be much more strategic in that vein and set some priorities. And, obviously, public health and protection of private property are going to be areas that are going to receive higher priority than perhaps some other areas might. In that way, I think we can use our resources much more judiciously.

Chairman MILLER. Mr. Lehman.

Mr. LEHMAN. Thank you very much, Mr. Chairman. And I too want to thank you and Chairman de la Garza for having this hearing today.

And I thank the witnesses. I am going to ask most of my questions of Mr. Lyons.

I was happy to learn that the Forest Service is now aggressively developing a plan to deal with western forest health problems. One of my concerns in listening to what I have heard today in the testimony or in the questioning is the tendency to treat these things as isolated incidents. You know, we have got fires and we have got owls and we have got grazing, when in fact we have a forest out there that is integrated and policies developed to solve a problem in one area which forces other choices and decisions and creates other problems in other areas.

The statement by Chief Thomas on August 29th I thought was very interesting, and I thought it was very accurate in its portrayal of the problems and solutions to what ail our forests. I found especially interesting the chief's emphasis on the need to develop desired future forest conditions for particular ecosystems as this principle is embodied in legislation which you know I have introduced, H.R. 4068.

I am hopeful we can develop forest lands that take into consideration entire ecosystems, emphasize local input and aim to restore particular conditions to those systems. I believe that along with the clearly articulated definition for ecosystem management, that will help restore the health of our forests and develop broader consensus around forest policy.

First, I would like to ask you, have you had a chance to review the legislation I introduced, H.R. 4068. It seems to me that segments of it seem to be integrated into the chief's testimony on the 29th. How does the Forest Service view that legislation?

Mr. LYONS. I have only had a brief opportunity to review the legislation you introduced, Congressman Lehman. I would say we are

generally supportive of a number of the ideas and concepts that are incorporated in the legislation. However, I am not in a position to respond to specific elements of the bill at this time.

Mr. LEHMAN. What about my idea to restructure the way forest planning is currently done; moving to management of the ecosystem rather than managing one problem at a time in one area at a time wherever it occurs?

Mr. LYONS. That is precisely where we want to head. And I think there is a great deal of wisdom in trying to look at resources as they exist in a landscape in a much more interactive and integrated manner.

The problem we have is, we are constantly attempting to catch up and, therefore, we deal with a particular species or particular issues, particular problems, one by one, in a very inefficient way. And, therefore, we need to have the opportunity to step back and look at these systems in their entirety and design more efficient ways of managing and addressing problems.

Mr. LEHMAN. What about my proposal to alter the budget process to allow the Forest Service to utilize more big bucket types of spending authorities so that money can be spent to improve ecosystems as opposed to segmenting appropriations to specific needs like recreation, wildlife, fire treatment, et cetera?

Mr. LYONS. Well, we are certainly supportive of trying to reduce the number of budget line systems and, in fact, we have been very pleased with the response of the Interior's Appropriations Committee to reduce the number of budget line systems that we have to deal with. It reduces the need for our people to function like accountants as opposed to resource energies which is what they have been trained to do.

Certainly providing more flexibility to the use of funds on the ground and the ability to move money between accounts to tackle management issues or specific concerns is a much more effective way to go and more consistent with ecosystem management approach that we are supporting.

Mr. LEHMAN. I am concerned that very little management of our forests is currently occurring due to—well, for instance, in California the guidelines proposed to protect individual species like the spotted owl. How do you propose to accomplish your objectives within that context?

Mr. LYONS. Well, what we are attempting to do is look at the needs of species in broader context so we are not driven by the needs of a particular species but rather by the habitat needs for multiple species in an ecosystem context.

For that reason, for example, in the Pacific Northwest, we not only looked at spotted owls, but we looked at over 1,000 species, as well as the needs of salmon which we are seeing today are of increasing concern.

It is important that we step back and look at things in their entirety so we are not driven to operate in an inefficient way which occurs when we have responded species by species, which you suggested in your opening comments.

Mr. LEHMAN. Do you have the tools to do that now?

Mr. LYONS. I think we have many of the tools we need to do that now. We need to take a look at our authorities and our capabilities

and see if adjustments wouldn't be necessary to improve our ability to do so, but certainly there is nothing that precludes us from designing and developing forest plans that are more strongly tied to this concept of ecosystem management, and that is part of what we are looking to do right now as we look to revisions in our whole land management planning process.

Mr. LEHMAN. I am concerned that the mandates and legal requirements that you have to meet to protect this species or meet this local objective or whatever it is out there, conflicts with the sound overall management of the forest. And my concern is that we get to sound overall management of the forest as quickly as possible rather than the rather piecemeal approach that we have now that I think is creating more problems than it is solving.

Mr. LYONS. Well, we certainly look forward to the opportunity to work with the Congress to try to address any problems that we have in the authorities we need to get the job done. I couldn't agree more that we need to ensure that we have the tools that are consistent with the science of today and, unfortunately, we deal with legislation that was drafted 20 or 30 years ago that may or may not be consistent with some of the management paradigms which are appropriate to ecosystem management.

Mr. LEHMAN. I live immediately adjacent to a national forest. It is quite obvious to anyone in a situation like that, we are all very concerned about fire. In the past, we have suppressed all fires in many of these areas. Now we have a tremendous buildup of fuel and then we have the drought that has exacerbated that with the death of many trees in the area, very few of which have been taken out.

And I have heard that there are problems—well, let me ask it this way: Is there a provision in the Clean Air Act for prescribed fires? Is that something you are working on with the EPA?

Mr. ARMSTRONG. What we pointed out is that we need to look at this because, frequently, there are prohibitions against causing that kind of air pollution, as it is called, and that perhaps we need to either work on either exceptions or timing or something that would let you do this based on the fact that it would be better in the long run to do it even though you might have a short-run problem.

Mr. LEHMAN. Let me ask you: Do you see prescribed burns playing a greater role in the forest management in the future?

Mr. ARMSTRONG. We certainly think it is true in the BLM in range management, and we think that it would be equally as good a tool to use in the uplands.

Mr. LYONS. We want to return, I think, to a situation that more mirrors the ecological processes and functions of these forest ecosystems. And fire was a natural component of many ecosystems, and we would certainly like to get back to a point where we can use that as a tool to manage in a way that more mimics natural conditions.

Mr. LEHMAN. Thank you very much.

Mr. VENTO. [Presiding] The gentleman from California, Mr. Dooley.

Mr. DOOLEY. Thank you, Mr. Chairman.

And I really appreciate the work of Congressman LaRocco and Congressman Lehman and their legislation on this issue.

I guess just following up on the line of questioning of Congressman Lehman in California where we have the California spotted owl provisions which specifically prescribe that you can't cut trees that are in excess of 30 inches in diameter, I was wondering in the development of that prescription, was there any consideration given to the potential impact in terms of the fire hazard that could be created by that type of prescription?

Mr. LYONS. I can't speak specifically to the CASPO guidelines, Congressman. I don't know if Bob is in a position to answer that.

Mr. DOUGLAS. I think at this point we have to get back to you on that, sir. Nobody here seems to be specifically familiar with it.

Mr. DOOLEY. I think we had an excellent hearing a couple of weeks ago, Mr. Lyons participated, where we talked about the GAO report in terms of moving toward an ecosystem approach.

Are there existing laws or regulations that make it difficult to move forward in a comprehensive fashion in terms of either managing the forest for fire and ensuring that we are not getting so focused on a particular species that we are making provisions for critical habitat maintenance there that is inconsistent and, in fact, could create greater jeopardy to the health of the forest as a whole?

And I guess, Mr. Armstrong, you made the comment that even in terms of air quality issues that we have to be looking at those. It seems like we haven't been as aggressive in identifying and acknowledging the inherent conflicts with the Endangered Species Act, with the Clean Air Act, with the Clean Water Act in terms of, if we follow the letter of the law, it is going to preclude us from moving aggressively forward with that comprehensive ecosystem approach.

The USDA and the Department of Interior, do they have a task force that is looking specifically at identifying these issues that have to be resolved?

Mr. ARMSTRONG. Well, I think that is an ongoing process. But the thing that has changed the management concept, the way I understand it, is that we originally thought, here is an endangered species zone, so we will manage for that species and we have determined that as an inappropriate way to do it.

If you would go ahead and manage the ecosystem so that it is healthy, then that endangered species profits. And, indeed, it can get you in trouble to manage a forest species if, for example, you let juniper grow for a critter that lives in my part of the world in Texas, to protect for the golden-cheeked warbler, that juniper will eventually take over all the area and you will lose your springs.

Among other things, we need fires in our part of the world and we can't do burning very much anymore because the growth has gotten to the point that it is hard to do. So all of these I think we need to look at. But the consent of ecosystem management recognizes if the ecosystem is healthy, then the critters are all going to be healthy and the endangered species profit.

Mr. DOOLEY. Under the existing endangered species act designating critical habitat that might be unique to one particular species, such as the case of juniper or cedar, whatever it is for the golden-cheeked warbler, if you identify that as being critical to that par-

ticular species and then you identify management practices which facilitate and actually enhance that particular habitat, isn't there the potential for conflict for other species that might be listed also?

Mr. ARMSTRONG. I suppose that is true. But I guess the point I am making, we have gotten away from owl circles, for example, and said, let's have a healthy forest and then you won't need owl circles, or you won't manage just for one species. But if you manage the ecosystem properly, then that endangered species ought to be OK and that would mean that that critical habitat was healthy.

Mr. DOOLEY. I guess the concerns that some of us have are not when you go to owl circles and then you go for fur bearer circles, you eventually have the entire forest which is encircled, and it really doesn't give you the ability to continue with a multiple-use management regime.

That is where I guess I support what I think I hear you saying. But at some point, it seems that the Departments are going to have to come forward and acknowledge that, if we are going to move forward with this ecosystem approach, we have to have some modification of our existing environmental laws and regulations as well in order to get the participation of the various stakeholders and acknowledgment that there is going to have to be some element of sufficiency in terms of amount of habitat that is going to preserve if we are going to be able to continue with a multi-use management regime within our forest.

Mr. ARMSTRONG. I concur with that, I think. I think we are on the same track. I would love to talk about it more.

Chairman MILLER. [Presiding] And if I might follow up, because this is something I wanted to address later in the hearing, but because both Mr. Lehman and Mr. Dooley have touched upon it, I think what we need from you collectively, the agencies involved in this issue, is a very frank discussion about the barriers to implementation.

You both touched upon it in your testimony. The Chief touched upon it in his testimony in Boise. I think we need a very, very strong discussion, before the first of the year and the next legislative session, about what the barriers actually are that we encounter on the ground as we try to put in place a policy that is supposed to take into account forest health, forest production, and the impacts of fire.

And whether it is endangered species or clean air laws or problems with local communities and whatever it is, I think those problems have got to be laid out for the Congress, certainly for our two committees' consideration, because my concern is that some of those problems and barriers will prevent you from going where perhaps you want to—there in fact may be high priorities areas, but you can't deal with them; if you can't deal with them, then later on, everybody is going to be pointing the finger at you. I think we ought to know some of this up front.

This hearing is not about fault. When you look at the historical statistics on fire, sort of like on children's issues, nobody has done it right yet, but we are getting better at it, and perhaps, what we experience this year clearly has to do with fuel loads and obviously with the overlay of the drought. But when you go back in time, you see the statistical ups and downs; we have lost an above average

number of acres a number of times and then we have been below average.

In the commercial forests, we are doing about what we historically have done, but you notice when we had very high levels of harvesting in the forests throughout the 1980's, we were burning up an awful lot of the acreage at the same time.

The question is now within these new parameters: ecosystems, forest health, trying to provide some sustainability of the forest and, hopefully, also of the timber production of that forest. How do we put together a comprehensive policy?

I don't think you can answer that question today. But we are going to come back at the beginning of the session and ask that question again. We are going to be looking for some answers. I think that you ought to be able to tell us those things that are major impediments after you go through this review in the Forest Service and, hopefully, as the other agencies look at what the Forest Service has done and done their own reviews. What are the major impediments? That has got to be part of the public discussion about what our policy is going to be with respect to fire.

And Mr. Vento has touched upon the issue of cost. There are going to be a whole lot of issues. I think if we are really going to get into a comprehensive policy, we have to take into account these other values and requirements of law. I just add this as a follow-on to what Mr. Dooley and Mr. Lehman have raised. I would hope that you would start to prepare yourself to lay that out before these committees so we can take that into consideration.

Let me, if I might, go to another subject. The green light works for me, too. That is how you become the former Chairman if you don't have the green light on.

What does fire do to your budget? As I have had it explained to me, we come along in the appropriations process and we allocate moneys throughout the Forest Service and throughout the Bureau for various functions, and along comes the fire season which is sort of at the tail end of our budget year. You start scooping out money and, you are taking money from other priorities such as forest health, fire management, and these other projects that are ongoing. They get dumped into fire suppression and then we start this cycle over and over. And sometimes repaying those accounts is not the same as it was when you initially took the money out or moved money around because we know the appropriations have gotten tighter and tighter.

What is happening to you on a cyclical basis here in terms of the impact of fire on the budget of the Bureau or the Service?

Mr. LYONS. I can speak for the Forest Service, Mr. Chairman, and tell you that it hurts us in terms of budget. The more we have to expend on suppression, the less resources we have for other programs and operations. We have traditionally borrowed money from the K.V. account to cover costs of fire suppression. And we have had to go back to the Congress and ask for emergency appropriations to cover the cost of operations.

Chairman MILLER. Is there real loss? Is it a temporary loss? Mr. Smith points out that the fire fighting fund is a revolving budget and we put money into it, but as has been explained to me, there

is money that shifted in the meantime that doesn't necessarily get back to those programs.

Mr. LYONS. That is correct.

Chairman MILLER. There is some net loss; is that accurate?

Mr. LYONS. That is correct. Because Mr. Smith is correct, we have a revolving fund but we have not always put money back into the account or an adequate amount of money to cover the cost of suppression, so those programs, those places where the money came from at the outset haven't been completely reimbursed, and we have come up short in some instances and that has been a problem.

I think one of the positive things that has occurred recently in the Interior Appropriations display, this year, for the fiscal year 1995 budget, they had a fire account that includes an accounting for our pre-suppression activities as well as our suppression activities so we could start to look at the entire fire account as we should. That is how much we invest in prevents as well as how much we pay for suppression.

That allows us to start, I believe, to get an accurate picture of the total cost of managing fire but it has been very, very costly. That is one of the reasons I think we are putting so much more priority on trying to come up with means to reduce or to prevent wild fire, to avoid the need to make investments in suppression which is the most costly way to go.

When those air tankers are dropping retardants, those are very expensive loads, but we don't have time to ask how much it costs when we are trying to protect lives and property and valued resources. That is not the way to have to do business even though we try to be as efficient as we can in suppression.

Chairman DE LA GARZA. Would the gentleman yield?

Chairman MILLER. Yes.

Chairman DE LA GARZA. I thank you and I apologize for having to leave. I have our committee working on some legislation. If my memory serves me correctly, the budget for the Forest Service, Secretary Lyons, is \$70 million to \$80 million. Is there a program expenditure needed and/or in use?

Mr. LYONS. Our requests basically have been based on historic trends in terms of cost of the suppression, Mr. Chairman. Obviously, when we have a year like this, it far exceeds the historic trend, the average, and therefore we come up short.

Chairman DE LA GARZA. I know that since my tenure here, you are always short because there is never enough allocated, but is there a coordinating effort between the different agencies, between you and Mr. Armstrong?

Mr. LYONS. Yes, sir. As part of the interagency efforts, we do look at how much we each have to expend for fire fighting. And I think part of what we are going to do this year over the winter is look at what the costs have been in recent years because of the extensive drought and fire situation and see what we need to do to ensure we have the resources next fire season so hopefully we don't come up short.

Mr. DOUGLAS. If I may, from the distinct point of the Department of Interior, it is a slightly different situation. I think we are a little better off right now than the Forest Service is. Since some pretty

dramatic changes were made in the way budgeting for fire was done in 1990, we have been fortunate enough to have enough money in the actual budget every year to cover both our pre-suppression and our suppression expenses.

It came very close this year. We spent close to every dime we had, but we made it, so we haven't had to have the account of transfers and borrowing that the Forest Service has had to go through.

I think, though, that the longer term budget question is equally important, and that is the more that we spend on fire, while it may not every year come out of someone else's pocket, it does come out of our overall allowances and targets and appropriations bill as more that we have to put in money as agencies for fire, the less that there is available to the directors to use on other kinds of activities.

So if we can come up with strategies—better preparedness, better fuel treatments, and so on—that over the long haul pull that suppression cost down, then it will make room in fairly tight overall budgets for other kinds of programs.

Chairman MILLER. Thank you.

Mr. Smith.

Mr. SMITH OF OREGON. Thank you, Mr. Chairman.

Mr. Lyons, you didn't answer my question so I am going to ask it again. I understand now that it is the policy, not just in the east side forest in Oregon, but generally speaking, that you in fact are requiring retention of all trees over 21 inches DBH. In some cases, that is about 70 percent of the blackened, dead, dying, and down timber.

Now, again, I want to ask you, how can you identify that policy when I suspicion and I can confirm this likely in time, but I suspicion that, except for the lockup downtown at the Department of Agriculture, there isn't a silviculturist or a forester in America that would justify this policy. In some cases, you know those trees are 200 years old, so you can identify what you are leaving.

And, in addition to that, many of them are bug infested. They infest the green tree next to them. This is a continuing act of irresponsibility for foresters not being given the opportunity to have some flexibility on the ground. If they have got enough snags in an area, why don't we let them take the dead trees out and why do we control them at 21 inches DBH?

Mr. LYONS. Well, Mr. Smith, we have and we will continue to operate in a manner that is consistent with our overall forest management goals and our objectives of maintaining the health of the ecosystems that we are managing, whether in eastern Oregon and eastern Washington or anyplace else in the United States.

The screens that you referred to were put in place by Regional Forester Lowe as a mechanism to ensure that timbering activities did not have an adverse impact on riparian areas and other resources within his jurisdiction. And those were designed by an integrated team that included silviculturists, wildlife biologists, fish biologists, hydrologists, and the like.

As you know, we use interdisciplinary teams to develop programs. Our overall goal is to maintain ecosystem health. We will continue to cooperate in a manner that seeks to achieve that goal.

Where there are opportunities to engage in salvage, especially as conditions have changed because of the fires we have had in the west, we will look to see if we need to make changes in policy.

That is the kind of review that is under way now as a result of the situation that has occurred here this summer, and it is part of what this team of forest health team that we chartered sought to do, to see what opportunities existed out there and whether or not we need to take slightly different approaches.

Mr. SMITH OF OREGON. Mr. Armstrong, do you have the same policy?

Mr. ARMSTRONG. I was not here in the room for all of it, but we do have the 21-inch policy.

Mr. SMITH OF OREGON. Twenty-one inch DBH, do you have that policy?

Mr. ARMSTRONG. The answer is, no, I am advised.

Mr. SMITH OF OREGON. Why not?

Mr. DOMBECK. We have got Mel Berg, our Chief of Forestry, here from BLM.

Mr. SMITH OF OREGON. Welcome.

Mr. BERG. Thank you. Our policies are to address the forest landscape as a whole and consider all the uses of the forest and make a determination as to wildlife needs, watershed needs, and timber values, whether they be snags or dead and down timber on the ground and how much of each component of the forest is necessary for forest health, and that is what we try to aim for.

Mr. SMITH OF OREGON. That is very judgmental. I am shocked. Tell me, then, do you take blackened, dead, dying, or down timber under 21-inch DBH?

Mr. BERG. Sometimes we do, sometimes we don't.

Mr. SMITH OF OREGON. How far down do you go?

Mr. BERG. Well, we go down to whatever is merchantable. If it is dead——

Mr. SMITH OF OREGON. For salvage purposes. I would assume 6 to 8 inches, you would agree, if it is merchantable.

Mr. BERG. If it is merchantable and it does not conflict with the objectives of the area. There are areas where we won't. We will leave them.

Mr. SMITH OF OREGON. Otherwise, you are leaving, what do you estimate, 60, 70 percent of the dead, blackened, dying timber on the ground in most cases in the west?

Mr. BERG. Well, we are not leaving them.

Mr. SMITH OF OREGON. You are not, but give me your estimate on the ONC.

Mr. BERG. I don't have a good estimate right now.

Mr. SMITH OF OREGON. Give me your best estimate.

Mr. BERG. Probably 20 to 30 percent, maybe.

Mr. SMITH. Thank you. One more quick question.

Mr. Armstrong, we have set a new record on the ONC. Normally we were harvesting a million two historically sustainable. Last year, we had a new record. We harvested 10 million board feet of timber and this year we have a new record over that, 8 million board feet of timber. That is enough to keep one sawmill alive for maybe six months.

Tell me what is your plan for the ONC and do you see any relief from this ridiculous cutback in harvest from the finest tree-growing land in America, without question?

Mr. ARMSTRONG. I would yield on that to my forest expert.

Mr. DOMBECK. I will let Mr. Berg deal with the technical forestry issues. But basically what we have had is, the pipeline closed down through a variety of litigation issues, and as we move forward with implementing the President's forest plan and to meet a variety of objectives, that pipeline will begin to open up.

And what we are looking at is probably a 2- to 4-year process as we look to putting new volume on the market.

And I will let Mr. Berg add to that from a technical standpoint.

Mr. BERG. It will take us some time to build back up to a—right now, we are pretty much at a halt, of course, because of the injunction.

Mr. SMITH OF OREGON. Eight million is a halt, yes.

Mr. BERG. What we are going to do now, after the signing off and implementation of the President's plan, of course, is to back up consistent with the plan that was signed into effect in April. We would estimate right now that we would probably be able to put 130 million feet on the auction block or make it available next year and then accelerate that up to what would be our allowable harvest level of about 200 million feet.

Now that, again, won't be all consistent with the sideboards that are within the President's plan considering the total forestry landscape out there.

Chairman MILLER. Mr. LaRocco.

Mr. LAROCCO. Thank you, Mr. Chairman.

Earlier you had mentioned, and we have discussed, Mr. Lyons, the forest health team that you put together. Could you describe that team and how you envision that team working after the report is put together. Will they stay together as a unit advising you?

And I have a couple more questions after this, which I will submit.

Mr. LYONS. Well, right now, we are working with a team to clean up the final report, get some clarifications to some of the recommendations that they generate and some of the issues that they raised.

Mr. LAROCCO. How big is the team?

Mr. LYONS. Thirteen members.

Mr. LAROCCO. Can you elaborate a little bit on the backgrounds and whether they are from the field or from Washington, DC?

Mr. LYONS. Yes. It is a combination of folks from the Washington office and from the field. We tried to place as much emphasis as we could on trying to get individuals in from the field who would have a working knowledge of the situation on the ground.

What I am searching for is a list of the members of the team.

Mr. LAROCCO. I have got it here and some documents that are helpful to me.

Mr. LYONS. In terms of background, the membership ranges from individuals with expertise in research and timber management, in forest pest management, in wildlife and fisheries management. We have administrative officers from forest, forest health, and ecology specialists, folks with expertise in State and private forestry, the

work we do there, as well as line officers from the Las Piedras National Forest.

So it is a fairly diverse group. And, again, the intent was to have people involved who had a good understanding for what it takes to get the job done on the ground.

Mr. LAROCO. Secretary Armstrong had mentioned concerns about air quality. You know you can have a lot of concerns about air quality and prescribed burning, and when you have the massive forest fires that are burning in Idaho right now, all the concerns about air quality go out the window because it is nature's happening and it is not man-caused.

Is there any way to deal with the prescribed burning, even in air quality from this historical range of variability concept in terms of the range so that you are not hindered by your quality standards? Not that I am for throwing that standard out the window, but that air can't be good that I fly over all the time right now. And, I mean, are these just practical problems that you are dealing with?

Mr. LYONS. I think I will let Bob get into this in greater detail, but that is an example of a situation where the goals and objectives of one agency to maintain clean air were developed, I think, probably without adequate attention initially to the goals and objectives of the Forest Service or BLM or other agencies in terms of fire management maintenance of forest health.

We now have a dialog going on with the Environmental Protection Agency to try and address emissions standards and come up with mechanisms to increase our ability to use prescribed fire to address our management goals and objectives. I think it is recognized as a problem.

But it is just one of those situations where I think we need to sit down and work with them, and most importantly work with the State agencies who also have a mandate primarily to protect clean air so they understand what our needs are and our overall goals and objectives are, and we understand theirs, and in that way work it through and hopefully address the situation.

Mr. ARMSTRONG. The note that I have here says that they are very complex but workable in the areas that are not close to major populations. I agree with you. I was told that the reason I couldn't see as well as usual in Wyoming the other day was because of Idaho fires. And, again, if we would do prescribed burning at a time certain and within certain conditions, you can reduce the smoke by the kind of conditions in which you burn. But I think this is—and my plea to you is, this is something we need to work on.

In another corner of this, let me say that we were prohibited from burning oil on water in a test case in the Gulf of Mexico by EPA standards because they said you couldn't cause that kind of pollution. So we had to go to do our test to see if this was a suitable way to operate and control oil spills in Canada. As a matter of fact, the test was quite successful and we discovered that it didn't pollute long as we incidentally found out across when Kuwait was burned, and so these are things we think we can work out is all I am saying.

Mr. LAROCO. Secretary Lyons, is the Department conducting assessments to determine which areas of forest are at the greatest

risk of wildfires as part of that team or just in this normal course of business?

Mr. LYONS. This was part of the survey that the team engaged in. And I know we are going to have some follow-up work to do on that, but we are actually attempting to identify and I believe the Forest submitted proposed projects where they felt that investments could be made that would improve forest conditions and forest health. It includes Idaho.

Mr. LAROCO. How did you know I was going to ask that? Is it predominantly wild land urban interfaces or are you looking at other landscapes as well?

Mr. LYONS. It is largely the range of conditions, I believe. We didn't focus exclusively on urban wild land interface, obviously, though that is one of those areas that has been focused on as potentially a priority focus.

Mr. LAROCO. Thank you, Mr. Chairman.

Chairman MILLER. Mr. Vento.

Mr. VENTO. Thanks, Mr. Chairman.

You know, we raised this question from the CRS paper on the amount of costs for dealing with 14 million acres of land. Obviously, you have taken even a considerable increase in spending over 10 years, as they point out is very difficult in these budget times, in order to effectively deal with the suppression of fire and eliminating or dealing with the salvage and the other problems that they discuss in here.

But one of the complicating factors is that in selling or providing for sale of salvageable and forest health types of issues where you have someone going on on a selective basis, making cuts that you have to actually share the revenues with the State. In other words, you are losing money on each one of these sales but, in essence, you have to go back and save or provide some of the money back to the State.

Is that correct, Mr. Armstrong?

Mr. ARMSTRONG. I am advised that is correct.

Mr. VENTO. And Mr. Lyons, the same is true for the Forest Service sales?

Mr. LYONS. That is correct.

Mr. VENTO. You know, the problem is here that, are you going to address that if we have a problem where we are losing money? It is one thing when there is a benefit as accrues in the Federal Treasury, but when it is a deficit, wouldn't it be reasonable to address this particular issue?

I mean, I understand that this is sort of sacrosanct that we have all of these dollars that are flowing out for whatever the purpose.

I don't propose that we change the type of assistance to the States with regards to coordinated fire fighting because I think the amount of money spent there probably is better in terms of achieving coordination, but are there things that could be done in terms of the States that have these serious problems, whether it is my own State of Minnesota and the counties in northern Minnesota and Chippewa and Superior National Forest?

What are our expectations with the counties with regards to their building codes and activities? In other words, do we have any type of limitations or requirements in terms of some sort of plan?

You talk about the residential recreation buildings. You talk about urban interface. I don't know if it is so much urban, but the point is that in fact these things are getting built further and further on a basis contiguous to the Forest Service boundary, and are we addressing that in any way?

Say we are going to give you help for—we are going to give you some of the receipts from the forest. We are giving you the assistance, the financial technical assistance, cooperative fire prevention assistance equipment and loan programs to help them in terms of dealing with this. In other words, assume it is coming one way, we are obviously getting some cooperation. What is coming back the other way?

We are talking about all these plans on Federal lands. I want to know what the plan is at these contiguous areas. What are the expectations there?

In other words, in Oregon, we have a whole land use plan. I hear about it all the time from my colleagues on the committee. Some of them like it. Some of them don't like it. But the fact is, what are we doing in the other areas. Are we just going to keep going down the road, in other words, trying to deal with this on a Federal level and not having the State also respond in any way, shape, form, or manner?

Mr. ARMSTRONG. As I said in my initial statement—

Mr. VENTO. I heard the shingles on the roof. I thought that was terrific.

Mr. ARMSTRONG. This is a beginning of a dialog to deal with these problems between us and you. And perhaps we should have some of the people from the local governments come in when we go forward with the dialog, as the Chairman said we would do in January or in the next session, and begin to deal with some of this. And that is a problem that I think needs some attention.

Mr. VENTO. I think we need for terms of study—they made a recommendation that is going to move the States along. If they are going to cooperate, how about cooperating in terms of planning so we don't keep setting up these situations.

We did that with floodplains. We have done that with other areas where we know there are high probability risk factors involved. If we are going to be the de facto fire fighters for these areas where people are building recreational and residential developments and we need to deal with health and safety once it is there, why can't we deal with it in a more responsible manner?

Mr. ARMSTRONG. We deal with barrier island development. We deal with earthquakes. We deal with hurricanes, but we for some reason haven't dealt very well with fire, knowing that it is going to occur. And I think it is time we did.

Mr. VENTO. Well, I mean, Mr. Chairman, and my two chairmen, the problem in terms of prescribed burn obviously is a problematic issue. I mean, if we can try to get something in the flow economically, or if we can do other things in terms of salvage, I think it is the last thing we are going to do is probably prescribed burns because the conditions and the risk inherent in it, it has to be a part of the package.

But it seems to me that other opportunities ought to be pushed forward here. We are talking about fuel management and the

buildup. I don't know whether it is the Montana culture species or forest health talks about not cutting in certain areas. And of course the stewardship program is much more. That is just another gimmick to try to make it flow.

But it isn't going to flow because the K.V. funds and complementary funds in the BLM aren't there because timber sales are down. They are off, so that particular program is ended and, unfortunately, we are faced with these types of expenses, Mr. Chairman, at a time when receipts are going to be down.

I guess we are going to get more for timber, but the receipts are going to be down. I think we are going to have to look to adding the resources here, so it seems to me the preventive way where we are spending money for the States and others, we have got to get better program medicine for those, a better bang for the buck in terms of those programs. You can't look at them blindly. You can't look at them blindly.

Mr. DOMBECK. We haven't looked at education. One of the areas we need to look is education to make sure that for the public that lives in these areas, that there is an understanding of the balance between pre-suppression and suppression and zoning needs and insurance and various other incentives. I think people want to do the right thing and we have to help them.

Mr. VENTO. I would also say that this problem hasn't occurred just since the spotted owl has been a problem or the kangaroo rat. This goes well beyond that.

Chairman MILLER. The gentleman's time has expired.

Sam, before I yield to you, if you might, if I could take a couple of minutes, Bruce, and I have got to go to Rules Committee and my apologies. I have many, many more questions that I guess will have to be submitted in writing and in the continuation of this discussion between the Congress and the agencies.

[The information may be found at end of hearing.]

Chairman MILLER. One of the things that concerns me is that in the middle of a large, and in some cases cataclysmic, fire, is that fire suppression sort of is equated with politically taking care of problems as opposed to what we can really do. And I think there is a tendency for Members of Congress and others maybe to overpromise what we are capable of.

Long before the spotted owl and since that time, and before ecosystem management and since that time, we are burning up a lot of acres, no matter what we are doing on those lands or what we have done historically. I am looking at what I believe is a Fish and Wildlife Service document and it is a narrative of the Tyee fire. It points out that the reports from land managers indicate that the fire's origin and progress had little or no relationship to landownership or whether the land was managed for timber production or reserved for other values such as spotted owl habitat. The report says, "The fire started on national forest land at about 4,000 feet elevation in forest managed for timber production that had been once harvested, then burned by wildlife in 1970. The remnant stand of unsalvaged small trees had collapsed and lodge pole pines were growing up through the debris. Recently, the lodgepole stand was precommercially thinned. From this site the fire burned into

a heavy logging slash, where it progressed quickly" and quickly reached 2,000 acres.

And it goes on to say, "The following day extreme weather conditions caused the fire to blow up to 20,000 acres. During this period of explosive progress, the fire burned equally quickly through 500-year-old virgin stands of timber and extensive stands of 20-year-old managed thinned timber that had been underburned every five years. The fire burned at elevations from 700 feet to 6,000 feet. Fire intensity mapping had shown the rates and spread of fire were tied closely to normal daily cycles of heating and cooling and with little or no regard to forest age, type, slope, or aspect."

I think that, hopefully, outlines some of the problems that we are encountering here; we can create all of the landscapes we want and, in some instances, nature is simply going to disregard those landscapes. There are clearly things we can do to mitigate these instances, but I think they have to be put into some context.

I appreciate our desire to manage these events to a certainty. I come from earthquake country and I am watching all of the rebuilding of the freeways and I still do not feel comfortable driving underneath one of them, but we will make them larger, bigger, and stronger and we are having success in that. But I do not believe we are going to be able to manage these to a certainty, because of budget constraints and the unwillingness of the Congress to give you the resources to even attempt to do that, and, simply, the uncertainties of nature as it confronts us from time to time.

I think that suggests that we have to—as we talked about with regard to the barriers—we have to have a serious discussion about the priorities. You mentioned you are down to 5 million acres. It looks like there are opportunities for some kind of integrated management, mechanical treatment, burning, harvesting, and what have you. We have to know if that is reality. Because we should not represent to Members of Congress and/or to the public that it is a reality if we are not going to pay for it.

And I think this whole question is one of what appears to be a lot of one-way revenue-sharing to localities on the edges of these forests, when I am not sure they are picking up their fair share of the responsibility. I do not just mean fiscally. You have to be responsible for some of your actions. You cannot just keep zoning your way into the forest and then believe someone else will take care of it. There is some assumption of risk here by planning commissions and by homeowners when they start to pick out these places to live. That assumption cannot be based on the assumption we are going to ride to your rescue to the nth degree.

I am sorry I have to leave, because there is a whole slew of questions that I think are raised about this policy, but I just wanted to put that narrative in the record and make sure that we focus on the unpredictability of fire, the implications of weather, time of day and everything else that goes along with it before we start telling Members of Congress and others who want to put on their hat with the star in the middle of a fire and tell you what to do. And thank you, Mr. Chairman, and, Sam, thank you for letting me interject that in between, and if we are fortunate enough to get in and out of Rules, I will return. Thank you.

Chairman DE LA GARZA. Mr. Farr.

Mr. FARR. Thank you, Mr. Chairman. I just want to follow up a little more on the issue of identifying the statutory impediments or at least identifying, as Chairman Miller just talked about, the tools you might use to prevent local governments or at least require local governments to understand the full cost implications of zoning into the forest as he mentioned.

One of the areas of risk in California where we have 32 million people living is the slopes of the Sierras, the Sierra foothills. They are rural counties; the pressure for development in those rural counties, very scenic areas to live is just tremendous. And they just do not have the sophisticated capacity to analyze all of the implications, and I am just wondering, in your development of recommendations that you might be able to come back to this committee with ways in which we could use our Federal policy to guide best management practices for development of areas in and around our forests.

For example, we have a lot of tools that other agencies give; Federal community block grant moneys that are given to build infrastructure in those communities, and often you cannot build the developments without that money. And perhaps those funds should be looked at as to whether they are consistent with good management practices.

Transportation moneys. Building roads in areas where they do not have a plan developed or a best management practice. Maybe it should be looked at whether that is good public policy.

Water moneys. These are usually moneys that are outside your agency but are essentially, if the right hand is not doing the right thing that the left hand is doing, we do not, we cannot coordinate. I am very excited that this initiative is really looking at the administrative and statutory impediments to achieving forest health objectives.

In the context of ecosystem management, we have talked all morning how important it is to have ecosystem management; that it is good money; it is good economics; a healthy forest is healthy for everybody. It is healthy for the commercial fishermen. It is healthy for the timber interest. It is healthy for recreation and tourism, and it is healthy financially because it does not put insurance companies and banks at risk if you have a major disaster and they have to insure it out.

So I would be very interested as you develop these recommendations and perhaps even bring some subcommittees of team composition that is not in your original list that might be advisers to your committee on how you could implement some of these recommendations. I think they should be broad and should be bold and they ought to be done as quickly as possible. Thank you.

Chairman DE LA GARZA. Mr. Inslee.

Mr. INSLEE. Thank you, Mr. Chair, I appreciate the panel's comments.

Mr. Lyons, in the discussion of erosion control, of course it is of great and immediate concern in my neck of the woods. Could you tell us if there are any roadblocks to doing what you need to do in that regard, very, very quickly, and anything you think we can help on.

Mr. LYONS. None have been brought to my attention at this point in time, Congressman Inslee. We are using moneys that were allocated to firefighting efforts for the initial phases of erosion control. In addition, funds that are available through the Soil Conservation Service through the emergency watershed protection account are being allocated, and there is a close working relationship between Forest Service, Soil Conservation Service, and the other agencies in developing rehab recommendations for those areas.

I believe they are moving quite quickly. In fact, when we went to visit the Tyee fire, we were walking among the smouldering ashes with a team that was doing assessments. So the fire was far from put out before they were out there and trying to make a determination what kind of investments are necessary.

So I think right now we are in good shape.

Mr. INSLEE. You mentioned limitations, financial limitations to actually get salvage sales up and going, if you will. Could you tell us what assurances we can have that there will be commitments in that regard so that the financial aspects of putting the sale through is not an undue hindrance?

Mr. LYONS. Well, I think we are making some progress there as well in getting additional funds for the salvage program. I think probably our greatest impediment is generating public understanding of what the salvage program is intended to do and overcoming some missteps that were made in the past where the salvage program was not properly used or not used for its original intent. And Congressman DeFazio alluded to that.

In addition, we are looking at any additional funds we may have, carryover funds, that we can invest to try and expedite some of the salvage program.

I think one other thing we are trying to do is to overcome some cultural barriers, if you will, within the Forest Service that will ensure that salvage sales, which until very recently were a small part of our program, are as valuable as green sales. There is a tendency to try to place emphasis on preparation of new green sales.

Obviously, conditions have changed in the West. There are millions of acres of salvage available, and it seems to me most prudent to make the investments in the timber that is down or dying, and if we do not harvest it soon, will be lost, before we pump additional funds back into the green sale program.

So we are trying to adjust our program to reflect the resource conditions we see on the ground. And clearly salvage is one of the more important opportunities we have.

Mr. INSLEE. Can you tell us anything specific in, say, Washington that you have done to give assurance and a higher confidence level to some of the problems, the abuses, if you will, so the past will not be repeated, so that the public can be assured that will not occur?

Mr. LYONS. The most important thing, I think, is we are trying to encourage forest supervisors and personnel on the ground to work with various interests to discuss with them some of the opportunities that exist on the ground. We are encouraging them to go out and identify parts of the landscape where they feel they can do salvage work; where they can make investments in the timber sale program, and hopefully, generate an understanding of what

the benefits will be for the resources and for the communities and the interested public.

That is the greatest challenge as opposed to going out and laying out sales, it is to go out, bring people from the industry, and from the environmental community out and let them see what it is we are trying to accomplish. Conceptually, there is very little disagreement about those goals, but when you go out and actually lay out the sales and it affects somebody's particular place of interest, then we have more difficulty.

So I think the key is a dialog so people understand what we are trying to accomplish and we will work together for that goal.

Mr. INSLEE. Thank you. Thank you, Mr. Chair.

Chairman DE LA GARZA. Mr. DeFazio.

Mr. DEFAZIO. Thank you, Mr. Chairman.

Mr. Lyons, Mr. Vento raised briefly, and Mr. Miller alluded, to the economics of the salvage, and I guess—have you seen this CRS report?

Mr. LYONS. Yes.

Mr. DEFAZIO. I just got it today. There are two things I want you to comment on. The first is on page 2. They say that, furthermore, the treasury loses even when the sales are net cash generators, because 100 percent of receipts are deposited in the fund for preparing and administering future salvage sales while 25 percent of the receipts are returned to the States for use on roads and schools in the counties where the national forests are located, i.e. 125 percent of salvage sales receipts are permanently appropriated, with the extra 25 percent being paid from profitable, nonsalvage sales.

I want you to comment on that and what you think about that.

And, second, the cost estimates here. These are pretty goosey. It says, probably range from less than \$100 to more than \$1,000 per acre; average treatment costs are probably about \$250 per acre. If 10 percent of the National Forest System lands in the coterminus western States, 14 million acres, were treated, total treatment costs would be about \$3.5 billion. That sounds to me about the biggest blue sky estimate I have heard in my life and now suddenly we are taking it as gospel.

Would you comment on that estimate, also?

Mr. LYONS. I don't want to comment on Ross Gorte's analysis. I would not characterize it as blue sky. You will have to talk to Ross about that. But I would suggest on the first point, if we look at these sales simply on a cash-flow basis, then the flow of receipts to the treasury will, in fact, be a negative.

I think what we need to do is step back and look at these investments in terms of overall benefits. That is if we can look at reduced cost of fire suppression, if we can look at reducing the cost of rehabilitation of areas that are severely burned over, and we factor those into the cost-benefit ratio, if you will, of some of these salvage sales, I think things might turn out to be more positive. And that is ultimately what we want to do.

We certainly do not want to make investments when net benefits are negative, but certainly in this case I think the benefits would outweigh the costs when you throw those factors in as well as protecting private properties where the costs get extremely high.

With regard to Ross' estimates of cost, these are ball park estimates, and we need to do a little more homework to determine what the specific costs would be on a specific site on a per-acre basis. Treatment costs can run high; however, the value of stumpage is such that the return to the treasury does look better in terms of a net cash-flow. You know yourself stumpage prices are extremely high for stumpage from private properties and that has created, I think, an incentive. The same is true for the stumpage we can obtain from public lands.

I think the other point is that it depends on what the market is for what is being harvested. In some cases this will be marketable timber; in other cases it might be biomass fuel. If there is a market for biomass, then the return to the treasury looks better.

But, overall, I would argue we need to start to look at these in terms of investments, not only from the standpoint of the benefits of avoiding investments in suppression and in rehab, but also the benefits that may accrue there—improving wildlife habitat from improving range condition, et cetera—that are part of these treatments.

Make no mistake about it, we are talking about investments in forest resources that have been neglected for some time.

Mr. DEFAZIO. There are those that argue we should do nothing in these areas and let natural processes go forward.

I guess what I would like to know is, is there any way to characterize the existing condition where lands have been high graded? You have not had the presettlement or, at least during the years of Native American settlement, sort of fire conditions that prevailed with often the lighter fires going through and a large high canopy which frequently can survive a fire.

Is there any way to characterize the condition of the eastern Oregon, western Washington forests as something that would have occurred without the intrusion of our management practices?

Mr. LYONS. I am not a forest ecologist, but based on my reading of the literature, I think it is fair to say that the information we have comes largely from the work of people who look at the frequency of fire, and I think the fire history indicates we would have normally had periodic moderate fires through an area.

For example, in the ponderosa pine forest, the East wood had larger trees, a limited number per acre, and very little fir understory, which is quite the opposite of the condition we have now when timber companies march their way through the West after taking care of the Northeast and lake States.

A lot of high grading occurred around the turn of the century in some of those forests. When that occurred, combined with efforts to reduce fire, fir, which is not natural or native to those ecosystems, became the dominant species. Under the stress of drought conditions we see now, they are highly susceptible to insect and disease and that has created what we have now.

The important thing for the public to understand is forest conditions we see today are not native to, if we went back to presettlement conditions, to what we would have seen in the past. We would have seen open stands with large ponderosa pine and more frequent fires of less intensity that would have maintained stands' conditions consistent with what I just described.

Mr. DEFAZIO. Where you talk about high grading before, you do not want high grading left, and in some of these areas we have the understory but we have remnant ponderosa now that were rejected with the early harvest efforts but now are pretty prime. In going into these areas, those trees would remain; is that correct?

Mr. LYONS. Let me be clear, the plans are set on a forest-by-forest basis involving input and participation from the interdisciplinary teams. But, generally, I think it is fair to say our goal is to get back to stand conditions which are more consistent with what we saw before the turn of the century and that would certainly have a higher percentage of larger ponderosa pine. Because that is what is natural to that system. It is more consistent with the kind of conditions we feel we ought to maintain and can maintain. So long as that is consistent with the overall goals and objectives of the plan, that is what we will have.

Mr. DEFAZIO. Thank you. My time has expired again.

Chairman DE LA GARZA. I don't know if it has been broached or not, but if it has, I will get the information from the record later, but what about the international aspect? Are you, especially with Canada, do we have a Memorandum of Understanding or how do we handle the management of the fires that could impact on Canada or vice versa?

Mr. LYONS. Well, Mr. Chairman, we have international agreements with Canada in terms of sharing firefighting resources, et cetera. I think Joan can elaborate on some of the work we do with Canada on that particular aspect of the forest situation.

Ms. COMANOR. As Secretary Lyons stated, we do have agreements with Canada where depending on where fires break out along the border with the United States, initial response sharing resources, sharing training, the kinds of cooperation that we have within the States.

Chairman DE LA GARZA. I know we had to enact some legislation to allow part of that, that we did not have authority to repay for fuel or equipment, but you do have a working relationship?

Mr. LYONS. Yes, sir, we do. And if they had not had a fairly bad fire season as well, we might have borrowed some of their resources sooner. We also do the same with Mexico, Mr. Chairman, you might be interested to know.

Chairman DE LA GARZA. All of us know about Smokey the Bear. But what about prevention at the local level? Ventura County, what about prevention at that level? Is there coordination between the county, the State, and the Federal of any kind on the prevention side?

Mr. LYONS. The Smokey Campaign is really an interagency campaign that involves all the Federal partners, the National Association of State Foresters, and the organizations they represent, as well as the Ad Council, and that program reaches down into the schools and to local jurisdictions and fire houses and people's neighborhoods and backyards, and it has been a very, very successful campaign.

As you know, we celebrated our 50th anniversary this year. We are down to a much smaller percentage of the landscape being affected by wildfire than was the case when the Smokey Campaign started and we have seen, I think, the fruits of our labor.

Nevertheless, we still have a situation where 90 percent of the wildfires we have to deal with are human-caused, and for that reason we continue to push the message about preventing wildfires that Smokey stands for, and that is one of the reasons we made the investments we did this year on the 50th anniversary to begin the process of educating another generation to the importance of preventing wildfires.

Chairman DE LA GARZA. What about if a fire is located solely within a stand of privately owned timber?

Mr. LYONS. Well, ordinarily that would be attacked either by local jurisdiction or by a State. If assistance is needed through the Memorandum of Understanding we have, then certainly Federal resources would be brought to bear. In fact, a large amount of the acreage that burned this year was State and private forest lands, and we worked cooperatively with those State agencies to try to fight those fires.

Mr. DOUGLAS. Mr. Chairman, if I may return to the Smokey question for a moment.

Chairman DE LA GARZA. Yes.

Mr. DOUGLAS. While Smokey has been very effective when used by all agencies to talk about human-caused wildfires, one of the things we are all aware of is the fact there is a great deal of public concern now about any kind of fire. And much of the dialog today has been about the importance of reintroducing fire under appropriate circumstances.

Within Interior and in conjunction with the Forest Service, we have begun some initiatives to begin a companion kind of public education program and school program to start reminding people about the valuable role that fire does play in appropriate circumstances, so that one of the major barriers that we face, a lot of this effort to reintroduce fire and deal with air quality and so on, is people's concern about fire as fire and we want to start making the message a little more complex and talk about the importance of avoiding wildfire but also the importance of recognizing where fire plays an important role. So that I would expect in the next generation will be an equally important message, along with the prevention campaign from Smokey.

Chairman DE LA GARZA. Now, in the preparation, I do not know at your level on the complexity of the issue, but in my area we have no timber, we have grass fires. But in the dry season where it is very, very dry, several of the local fire departments place in a strategic location firefighting equipment or fire engines or whatever. Do we do that at the Federal level?

Mr. DOUGLAS. Part of the planning process, whether it is on the grasslands or the forests or wherever, is to optimally place equipment and personnel and so on. We try to have our fire stations and so on located—each of the agencies has a fairly sophisticated fire planning process which looks at historical fire currents of the area, time of year, weather conditions, and so on, so that we try to place—again it is a matter of risk management—we try to place appropriate resources at the appropriate locations at the appropriate times of year, so that we can be as prepared as possible for expected occurrences.

Mr. LYONS. In addition, Mr. Chairman, as I believe you are aware, through the Federal Access Properties Program, we actually give excess or loan excess Federal equipment to local jurisdictions for their firefighting purposes in rural areas. So——

Chairman DE LA GARZA. I need to talk to you about that.

Mr. LYONS. I had a feeling you might want to bring that up. That is why I mentioned it.

Chairman DE LA GARZA. On behalf of Chairman Miller, we thank you for your cooperation and your presentation. You can well understand that we need to continue a dialog because there is much more to be addressed and for this we appreciate. We will be in touch with you, and the committees will stand adjourned.

[Whereupon, at 11:55 a.m., the committees were adjourned; and the following was submitted for the record:]

STATEMENT OF
JAMES R. LYONS, ASSISTANT SECRETARY
NATURAL RESOURCES AND ENVIRONMENT
UNITED STATES DEPARTMENT OF AGRICULTURE

Before the
Committee on Agriculture
Committee on Natural Resources
Concerning
Fire Suppression, Fire Prevention,
and
Forest Health Issues and Programs

October 4, 1994

MR. CHAIRMEN AND MEMBERS OF THE SUBCOMMITTEE:

Good Morning. I am James R. Lyons, Assistant Secretary for Natural Resources and Environment for the Department of Agriculture. With me today are Joan Comanor, Deputy Chief for State and Private Forestry; Jerry Williams, Fire Management; Joe Lewis, Forest Pest Management; and Dr. William Sommers, Fire Research.

Overview

This year's wildfires have brought to the public's attention a forest health problem that had its beginnings over 100 years ago. This year, 40,000 fires burned 1 million acres of state and private lands, and 12,000 fires on National Forest System lands burned over 1.2 million acres. Total costs on National Forest System lands are expected to exceed \$700 million and more than 28,000 firefighters were in action, including Department of Defense personnel.

In much of the West, health of National Forests, other Federal lands and private and State lands is closely related to changes in the historic role of fire on those lands. Without thinning or prescribed fire to replace the effects of wildfire, our forests have changed. Today's forests are particularly susceptible to insects and drought and tree mortality from these agents has been widespread in the west in recent years.

The forest health problem and associated high intensity wildfires are indicators of ecosystems that are not in balance. The same problems will be with us next summer and each summer in the future unless we recognize that some short-term and long-term actions are necessary to improve forest health.

We must begin addressing the overall forest health issue on an ecosystem basis by restoring high risk sites to within their natural range of variability. This includes salvage logging, reducing fuels through mechanical means, thinning densely stocked stands and the use of prescribed fire to appropriate ecosystems to reduce the risk that uncontrolled wildfire will damage site productivity or destroy human life and property.

While the recent fires have highlighted forest health concerns in the west, there are forest health problems in the east and southeast where the accidental introduction of exotic pests such as Dutch Elm Disease, Chestnut Blight, and gypsy moth has had a devastating effect on several forest ecosystems. Native pests like the southern pine beetle and fusiform rust also continue to cause significant problems.

Background of Fire Suppression in the United States

In the late 1800's and early 1900's, timber harvest practices on private lands resulted in large land areas where all merchantable tree species were removed, slash was left on site, and little or no reforestation efforts were taken. This resulted in numerous slash fires and wildfires burning from 20-50 million acres annually. These fires were not confined to just the Western states, and were common in eastern, southern, and Lake States. In 1871, 2,000 people were killed in fires in Wisconsin and in 1910 in Idaho and Montana, 85 people were killed and over 5 million acres were burned.

The first Federal and State land managers reacted to this concern by developing a fire suppression policy that was designed to attack and suppress wildfires to protect natural resources, especially timber resources.

These efforts proved very successful and the acres burned by wildfire dropped to 3 to 5 million acres annually. However, while these management actions were very successful at reducing acres burned, they also contributed to some of today's forest health problems.

Forest Health in the Western States

By the 1880's - with elimination of Native American burning and the settlement of western valleys, and the advent of livestock grazing - fire frequencies in these fire adapted forest ecosystems decreased dramatically. Fire suppression was routinely employed to protect homes, grazing lands, and timber resources.

Beginning in the early 1900's, the composition of western forests was also affected by timber harvesting, which concentrated on the larger, more valuable species such as ponderosa pine and western larch. This resulted in forest stands with a high percentage of firs when compared to earlier stand composition.

These ecosystems make up a major portion of the forests in Idaho, the eastern Cascades, portions of California, Arizona, New Mexico, the front range in Colorado, and the Blue Mountains in Oregon. Forest health problems are widespread across these forests.

For example, Douglas-fir and white fir now dominate these sites in densities far greater than when ground fires burned at frequent intervals. Hence, the amounts and distribution of habitat for insects that attack fir species is enriched. The problem has been exacerbated by the recent and continuing 10-year drought which has increased the stress on the densely stocked trees, making them even more susceptible to insects and disease. During this time, insect and drought caused mortality has been heavy and widespread in many areas of the west. In addition, some high elevation and lodgepole pine forests have major forest health problems.

Taken together, the interaction of human influence and natural events resulted in an ecological condition that is frequently described as a "forest health" problem.

The problem culminates when such stands, with very heavy fuel loadings resulting from tree mortality, burn at very high temperatures and over extensive areas. Such high energy fires are much more damaging than naturally occurring fires, because the dense fir stands, containing or dominated by dead trees killed by insects and disease, provide a means whereby fires can "ladder" into the tree crowns, including old growth trees. These "crown" fires produce higher-intensity, rapidly-spreading fires that are difficult or impossible to control. Such fires can heat soils so excessively, that for some years afterwards, nutrient levels are drastically lowered and the soils actually repel water, causing significant watershed and water quality impacts as well as problems with tree regeneration.

Insects, disease, and wildfire are normal components of ecological processes in these forests. However, when the ecological state of the forest is dramatically altered by the absence of natural fire and other management practices, the role of insects, disease, and wildfire is likewise altered. The frequent, low intensity fires of the past created forests that were ecologically more stable than the forests of today. The current forest ecosystems, particularly on warmer, drier sites, are more susceptible to insects, diseases, and stand replacement fires than have been observed and recorded before.

Once a fire occurs that removes the entire stand, all forest resources are dramatically altered. Even with aggressive restoration and rehabilitation, it commonly takes years to restore productive forest stands.

Forest Health Problems in the East

Eastern forests have a dynamic history. Within a relatively short timeframe, much of the forested land in the East was cleared for agricultural uses as the region was settled. By the early 1900's, this process began to reverse with many areas, particularly in New England and the Appalachians, reverting back to forests.

Historically, the northeastern and midwestern forests have had their share of forest health problems primarily from introduced pests. Chestnut blight, a disease introduced to the U.S. around 1900, was the most damaging agent to occur within these forests. At one time, American chestnut comprised at least 25% of eastern oak-hickory forests. Today, only occasional sprouts are found which never reach maturity. A second major pest confronting the forests where oak is prevalent is the gypsy moth. This insect pest has been gradually spreading south and west since its introduction in Massachusetts in 1869. In recent decades, Dutch Elm disease has virtually eliminated the American elm in urban areas and as a major component of bottomland hardwoods. These three introduced pests exemplify the devastating effect exotic pests can have upon our native forests.

Other forest health concerns in the east and midwest are acid deposition in some high-elevation spruce forests in New York, Vermont, and New Hampshire and air pollution.

Forest Health Problems in the South

The southern pine beetle (SPB) continues to be the most significant insect problem in the Southern Region. Fusiform rust continues to be the most serious, widespread forest disease problem in the south. Other forest health problems are exotic or introduced pests such as the butternut canker which has killed most of the butternut trees, dogwood anthracnose which is killing most of the dogwood at the higher elevations, and the hemlock wooly adelgid which is killing eastern hemlock.

Wildland/Urban Interface

A significant and growing concern is the increased loss of lives and personal property caused by recent fires in the West.

In these areas, called the "wildland/urban interface," forest health problems have contributed to an increased risk of wildfire. Forest health problems are dramatically magnified when more and more people build homes in natural settings where fires historically burned every 5-to-30 years. In fact, among the worst national disasters in terms of property loss were the October 1991 Oakland fire which caused \$1.7 billion damage and the October 1993 California fires that caused \$950 million in damage.

These interface areas are protected by a combination of local, State, and Federal fire protection personnel. In deploying our Federal wildland firefighting resources, our policy is to first protect life and property. In large wildland fires on wildland/urban interface, city, county, and rural volunteer fire departments cannot protect every home. As a result, we must divert wildland fire suppression resources from protecting natural resources to structural fire protection.

I want to note here that wildfire risk in the wildland/urban interface is not limited to the west. In 1985, a wildfire destroyed 250 homes in Florida, in 1990 a wildfire burned 6,000 acres and 75 homes in Michigan, and in April 1994 over 25,000 acres were burned in North Carolina.

The increasing losses of private property illustrate that we must begin addressing basic, common sense, fire prevention and fuel reduction guidelines for these areas. For example, State and local governments need to address building codes necessary for "firewise" construction and for providing adequate access into these interface areas for evacuations and fire equipment. And, all of us involved with firefighting in this wildland/urban interface need to increase our public education and involvement to assure "firewise landscaping." A recent example of this effort was the Los Angeles County Supervisors approving a ban on wood shake and shingle roofs, stricter building and fire codes, stronger brush clearing rules, and improvements in water delivery systems in the county's fire-prone areas. In addition, we need to address the

recommendations of the Rural Fire Protection in America and the National Wildfire Disaster Commission Reports.

The Forest Service can only take direct actions to reduce this wildfire risk on National Forest System lands. It is for others to decide whether or how to address this risk on private lands.

However, we need to jointly begin to find ways to reduce the wildfire risks at the wildland/urban interface. If this is not done, we will continue to find ourselves deploying our wildfire suppression resources to protect structures in the wildland/urban interface. In turn this dramatically diminishes our capacity to protect natural resource values. It also prescribes a fire fighting strategy which may not be the most effective or the safest approach in the overall context of natural resource protection.

Goals for Restoring Forest Health

While immediate concerns for forest health are focused on the west, we must also look at solving the broad issues in forest health that affect lands nationwide. Our report "Healthy Forests for America's Future," completed in April 1993, recognized the seriousness of the forest health problem nationwide. In this report, a broad view of the interactions of fire, insects and disease, including exotic pests, and ecological succession is taken as we move to the consideration and management of forests as ecosystems.

Solving the Forest Health Problem

From this broad view we can begin initiating activities to restore forest ecosystems. In the West, in areas where human safety and private property are at significant risk, salvage harvests, thinnings, and mechanical reduction of fuel loading can reduce the likelihood of high intensity wildfires. In other areas, careful use of prescribed fire, after fuel loadings are reduced to acceptable levels, will be needed to manage fuel loads over the long-term. Presently, we are applying prescribed fire on 450,000 acres.

We have some examples where the application of prescribed fire has reduced the intensity of the wildfire such as the Tyee Fire in Washington state.

In the south and east, we are working with states to conduct suppression and public awareness programs to contain the gypsy moth. We are working with private landowners to implement forest stewardship plans that emphasize a sustainable forest resource.

Nationwide, we need to jointly continue our aggressive efforts to monitor insect and disease populations; to use an integrated pest management approach when suppressing insects and disease; and to assist the Animal and Plant Health Inspection Service (APHIS) in detecting and controlling exotic pests.

We need to increase our efforts in Fire Research that provides the foundation for our modern fire management and to meet the new challenges of increased forest health problems, the wildland/urban interface, and implementing ecosystem management.

However, in moving to address the long-term forest health problem, no single approach or action will fully address the fundamental forest health problems. This will require using a variety of management practices to achieve the desired future condition for each site with the overall forest mosaic. The best foundation for determining this desired future condition is to complete a comprehensive scientific study of the natural and human-influenced processes that have maintained a given forest type over time. Examples of studies presently underway are the Forest Service and Bureau of Land Management's Eastside Ecosystem Management Project for the forests of the Columbia Basin and the Sierra Nevada Ecosystem Project in California.

The Eastside Ecosystem Management Project, in cooperation with Forest Service Research and the University of Washington, is gathering scientific data from the recent state of Washington fires to determine short-and long-term impacts of the wildfires. The preliminary data will be available in January 1995.

From these ecosystem assessments and the amendments to forest plans that will be based on this information, we will prescribe management practices that use the best scientific and technical knowledge to achieve a desired future condition. We need to ensure that the long-term actions taken to resolve current forest health problems do not result in a different set of forest health problems some decades in the future.

Specific Actions to Address Forest Health Problems in the West

As I mentioned earlier, most of the West's forest health problems seem to be clearly related to the disruption of historic fire cycles and past timber harvest practices. We have established a special team that is comprehensively evaluating forest health conditions and identifying ways to accelerate needed actions to restore forest health in the west.

They are completing their report that outlines the most effective short-term and long-term strategies to begin restoring forest health and reducing the wildfire risk to life and property in wildland/urban interface.

I want to highlight some of the preliminary recommendations that the team is considering.

Develop a framework to determine ecosystem restoration project priorities using ecosystem management goals and objectives.

Use the current Memorandum of Understanding for Inter-agency Endangered Species Act consultation to develop procedures for streamlining consultation and recovery efforts.

Streamline the internal agency process for developing Wilderness Area fire plans.

Monitor the implementation and success of actions under the Western Forest Health Initiative.

Continue with Congressional direction to modify Forest Service budget structure to minimize duplication by integrating funding and targets.

Improve coordination efforts with the Western State Foresters.

Continue to involve the public in our efforts to restore ecosystem health.

Investigate the use of land management service contracts to restore ecosystem health.

Fire Rehabilitation

We are also taking actions to rehabilitate lands burned by wildfire.

Our policy is to immediately survey the burned area using an interdisciplinary team comprised of watershed specialists, fishery and wildlife biologists, silviculturalists, and plant ecologists. In situations where wildfire has burned over lands managed by state and Federal agencies and privately owned lands, a cooperative rehabilitation team is organized that includes representatives from all the lands involved.

The objectives of the rehabilitation efforts are to initiate immediate actions after wildfires to minimize:

- Loss of soil and onsite productivity;
- Degradation of water quality; and
- Non-fire threats to life and property such as mudslides onsite and offsite.

Treatments include the seeding of grasses and shrubs to reduce soil loss; installing debris dams in stream channels; placing erosion control structures on highly erosive soils; and restoring and seeding unneeded fire lines, fire breaks, and roads.

Summary

We are faced with a serious forest health and wildfire problem in the West particularly in the historic 5-to-30 year fire interval forest ecosystems. The question is not whether these areas will burn, but only a question of when. The human and monetary costs of continued management inaction in these areas are and will remain high for forest resources and private property in the adjacent wildland/urban interface unless actions are taken to reduce these risks.

Priorities concerning areas to be treated should be set on the basis of protecting human life and property, economic efficiency, environmental effects, resources available, insect and disease risk, and capacity of industry for processing woody material removed from treated sites.

Obviously, not all areas can be treated immediately. However, we have the basic knowledge to begin treatment of the forest health problem in the short-term by restoring high risk sites to some semblance of their historic condition. This can be approached through a combination of salvage logging, reducing fuels through mechanical means, prescribed fire, and thinning of densely stocked stands.

In the long-term, we need to continue cooperative efforts with local, state, other Federal, and private landowners to reduce the risk of insect and drought caused mortality associated with overstocked and stressed forests and the wildfire risk in the wildland/urban interface, to increase our Fire Research efforts, and complete our comprehensive ecosystem assessments.

And while suppressing wildfires continues to be a major goal, we need to build on the successful use of prescribed fire in the southeast and increase public awareness and support that the use of fire can be beneficial as we implement ecosystem management.

Everyone must be reminded that the solution may require the re-allocation of existing funding to begin treating forest health problems. In many areas it makes sense to take preventative measures now, rather than suffer losses and incur greater fire and pest damage at a later, but almost certain, time.

The solutions described also contain some risks. Despite our best efforts, some prescribed fires may escape and may, in some cases, threaten life and property. However, the risks may be relatively small when compared to the cost of high intensity wildfires.

Critics will question the validity of new approaches on the basis that forestry practices of the past contributed to this situation. And, they will question any management effort that includes cutting trees as a solution to a forest management problem.

Yet, we cannot simply step back and wait for "nature" to take its course. What has happened this fire season is not acceptable as a solution to the problem. Fires of this scale and intensity are too destructive, too ecologically and economically damaging to be tolerable. We have learned much about fire science since the 1950's. It is time to begin to apply what we have learned with a new vision of what we want from our forests and our forest managers.

We need to adopt nationwide the successful use of prescribed fire through which the southeast has maintained many fire dependent ecosystems and reduced the risk of catastrophic wildfire.

We will continue our long-term national commitment to restoring and protecting the health of America's forests. Although we are taking positive steps now, the forest health problems of today will not be solved quickly and new problems may occur. We must continue to monitor forest health conditions nationwide, and to be alert for new or increasing problems wherever they occur.

This completes my testimony. We would be happy to answer any questions you may have.

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FIRE MANAGEMENT CONCERNS WITHIN THE US FOREST SERVICE

This year on the Payette National Forest fire has had a big impact. Not only on the forest but on the community and the other resources within the forest, such as recreation, and wilderness. It has also impacted those persons who in the midst of the fire activity continue to try to provide for visitors to the National Forest.

The following are concerns that have been witnessed by me, and show a lack of fiscal responsibility on the part of the Forest Service and how fire is managed.

HOW MUCH MONEY WAS SPENT IN PROTECTION OF PRIVATE PROPERTY VS THE SUPPRESSION ACTIVITIES ON THE FIRES ON THE PAYETTE NATIONAL FOREST?

UNDER WHAT LAW OR DIRECTION IS IT THE FOREST SERVICES' RESPONSIBILITY TO COMPENSATE PRIVATE LAND OWNERS FOR DAMAGE TO PRIVATE PROPERTY IN A NATURAL WILDFIRE?

DOES THE FEDERAL GOVERNMENT COMPENSATE LAND OWNERS IN THE EVENT OF OTHER NATURAL EVENTS SUCH AS A FLOOD, EARTHQUAKE, OR TORNADO?

HOW IS A NATURALLY IGNITED FIRE ANY DIFFERENT?

WHY ARE CREWS PAID FOR 12 HOUR DAYS WHEN ON STAND-BY OR IN A STAGING STATUS? I recognize the need to have the crews ready, however I do not see the need for the 4 hours of overtime pay when there is no need, they are there in preparation. This type of situation occurred at the Chamberlain Station. Crews were positioned for structure protection in the event the fire was to burn over that area.

CREWS IN A STAGING OR PREPOSITIONING STATUS CAN SURELY PROVIDE SOME TYPE OF WORK RATHER THAN BEING ASKED TO "HANG OUT" FOR THE TIME NEEDED.

WILL ADDITIONAL FUNDS BE PROVIDED TO REPAIR RECREATION FACILITIES WHICH WERE DESTROYED OR DAMAGED, SUCH AS, BRIDGES AND TRAILS NOW COVERED WITH DOWNED TREES FOR THE COMING SEASON? IF NOT WHY NOT? Surely if we can compensate private land owners for their losses the forest users should be compensated for theirs by repairing or replacing damaged trails and bridges.

WHY ARE FIRE CREWS PERMITTED TO HAVE FIRES DURING TIMES OF FIRE RESTRICTIONS WHEN OTHER VISITORS ARE NOT? Doesn't this set a double standard? If they are to be permitted there is still NO excuse for leaving a fire unattended.

WHEN WILL THE FOREST SERVICE ALLOW FIRE TO PLAY A NATURAL ROLE IN THE WILDERNESS WITHOUT SUPPRESSION ACTIVITY?

I DON'T BELIEVE THE FOREST SERVICE SHOULD BE PROTECTING AREAS WHERE PEOPLE HAVE BEEN KNOWN TO CAMP IN WILDERNESS AREAS FROM FIRES. Fire is part of the natural cycle and should be allowed to burn, we are the visitors and should adjust our behavior.

IS THE FOREST SERVICE TRULY DOING THEIR BEST TO KEEP THE COST OF FIRE SUPPRESSION DOWN IN REGARDS TO USE OF FIRE RETARDENT AND OTHER AIRCRAFT RELATED SUPPRESSION ACTIVITY? I have been told several times by persons directing these types of activities that they "have to put on a show so people will think we are doing all we can." Surely the American people can understand that fire managers cannot stop a wall of fire anymore than we can stop a hurricane from coming ashore. I would rather have them use the resources responsibly and when they will truly accomplish the job than just throw tax payers dollars at the fire for a show.

AND PLEASE DO NOT REFER TO AREAS OF THE FOREST THAT HAVE BEEN BURNED, PARTICULARLY IN THE WILDERNESS AS DESTROYED! These areas are not destroyed just changed.

Thank you for your time and I hope that some of these concerns will be resolved, in the coming hearing.

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**Hearing
Before the
Committee on Natural Resources**

Concerning Forest Health

October 4, 1994

Submitted for the written record for the hearing mentioned above

by

**Daniel B. Botkin, Director, Program on Global Change, George Mason University,
Fairfax, VA and President, Center for the Study of the Environment, Santa Barbara,
CA**

My name is Daniel B. Botkin. I am an ecologist with three decades of experience in research on forest ecosystems and attempts to help solve complex environmental problems, especially those that concern forests. Among my work, I have done research to determine the first statistically valid estimates of biomass and carbon storage in the boreal forest and eastern deciduous forests of North America. I have developed the JABOWA computer model of forest growth, used widely around the world to simulate the growth of many kinds of forests, including those of North America. I have used satellite remote sensing to determine changes in successional stages of forests. My research on forests also includes studies of the effects of global warming on forests in Siberia, and carbon sequestering potential of tropical rain forests in Costa Rica. I have done research in a number of U. S. National Forests, including the White Mountain National Forest of New Hampshire and the Superior National Forest in Minnesota. Other parts of my experience are given in an addendum.

Last month I addressed the Senate Subcommittee on Agricultural Research, Conservation, Forestry and General Legislation in written testimony to their hearing in Idaho on August 29, 1994. Today I would like to elaborate on those remarks, before this Committee, on the subject of forest health as related to wild fires, especially in the American West. As I have written in my recent book, Discordant Harmonies: A New Ecology for the 21st Century, fires are a natural part of forest dynamics, and have been for thousands of years. However,

Statement by D. B. Botkin

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for approximately the past 100 years, the policy of fire suppression has dominated management approaches in the United States and this has led to important changes in the risks of fire, especially those associated with the amount of fuels available for fires.

I would like to make three points. The first is that prior to the intervention of people of European descent, fire was a common element in most forests of North America. Second, that scientific understanding of forests and modern technologies allow new approaches to the fire problem; these approaches can help forecast areas of high risk, aid in planning, lead to pro-active rather than reactive policies, and have the potential to save lives and considerable amounts of property. Third, the development and application of these technologies to the fire problem appears to be most productively approached through a system of partnerships among industry, universities, and government in research, development and application.

At present, we find much of the discussion about control of forest fire divided into two extreme camps. On the one side, we hear that all forest fires are "unnatural" and destructive and should be prevented; that it is primarily human beings that have produced the situations that lead to disastrous fires. On the other side, we hear that any intervention by people in nature is bad, and therefore even attempts to control wild fires where fuels have been allowed to build up to levels not common prior to European settlement, are "unnatural." Based on my many years of research and study of the characteristics of wilderness forested ecosystems, it is my professional opinion that neither of these extreme points of view is correct.

I will begin by addressing the first point: that fires were common in forests prior to European settlement of North America. Fires were common in most forests of North America, with the intensity and frequency varying over time. Many species of trees and wildlife that live in forests are adapted to, and require fires to persist. This is well illustrated by the Kirtland's warbler, an endangered species which became endangered because jack pine woodlands in Michigan, where it nests, were disappearing because of the policy of fire suppression. Jack pine comes in only after fire -- its cones have a glue that prevent release of seeds unless the cones are heated by fire, and young jack pine cannot grow in the shade of other trees, and therefore cannot persist without fire. A program developed by the U. S. Fish and Wildlife Service, the Audubon Society, and the Michigan Department of Natural Resources has led to prescribed burning on a 38,000 acre preserve, with the expressed purpose of providing young jack pine stands on which the warbler depends. Lodgepole pine in the West has similar cone characteristics and also needs the heat from fires in order to regenerate.

We also know that the policy of fire suppression in the United States during the 20th Century has led to a build up in fuels in the form of dead wood and other dead organic material, as well as dense stands of trees in various conditions of health. When a fire starts in such a forest, it achieves an intensity much higher than would have occurred if there had been a history of frequent fires. There are several concerns with these intense fires including that

the fire's intensity may burn much of the organic matter in the soil, thereby reducing soil fertility and may also be intense enough to kill the largest seed trees, which would have been resistant to the frequent light fires. Without appropriate soils and without seed trees, areas now forested may not regenerate once they are subjected to such fires.

There are examples where artificially intense fires have resulted in a failure in forest regeneration. For example, between 1840 and 1920, 19 million acres of white pine were logged from the forests of Michigan. The unused limbs, branches, twigs and leaves -- the "slash" -- were left on the ground. Fires spread frequently from logging camps and there was little attempt to suppress them. Some of these fires were so intense, because of the high fuel loading, that the organic matter was lost from the soils and some of the areas have never reforested. They are famous in Michigan as the "stump barrens."

These examples suggest that fires had generally been frequent enough in the forests of North America to keep the fuel load low. As a result, fires were not so destructive; they did not prevent rapid regeneration and they were not destructive to soils. Of course, even prior to European settlement, occasionally due to a combination of factors, some forest stands went for a long time without fire. These would then suffer the kind of intense fire I have described that followed the logging in Michigan. This would have been more likely in areas that had a generally wet climate but experienced widely-spaced incidents of drought, during which intense fires can occur.

What is different about our present situation is that we have succeeded in suppressing fires for most of the American West, and there is a danger of intense, destructive fires over a huge area. In addition, of course, these areas are widely settled and these intense fires can threaten human life and property.

It is not, therefore, a question of whether it is "natural" to suppress fires or "natural" to let a fire with an abnormal fuel available burn. The typical "natural" condition was not like either of these. The real question is: how can we minimize the negative impacts of the fires that might occur throughout much of the American West both to the capacity of the forests to regenerate and to human and societal goals and needs?

The present approach to dealing with forest fire risk emphasizes putting out a fire once it has started. This leads to many difficulties such as experienced in many parts of the American West this summer: fires occur where they are not expected; manpower to fight the fires is not adequate and the intensity of the fires leads to the kinds of destruction that I had mentioned earlier.

My second point is that modern scientific understanding and new technologies make it possible to take a pro-active approach to forest fire risk. We can both estimate the risk of forest fire for various areas, and determine the relative risks among areas. We can project the likely intensities and even, given wind and weather conditions, make some forecasts of the likely direction and speed of a fire.

With modern computer tools such as geographic information systems, we can determine forest fire risk for an area in relation to human settlements, industry, power lines, roads and other access areas that might be used by arsonists. With computer based models of forest growth and fire spread, we can forecast how these situations might change in the future. The development of certain kinds of computer data bases and models, and the combination of these tools, would enable us to plan for fires and to take actions now that would reduce the undesirable effects of fire. We could use these computer based tools to determine where forest fire risk was the greatest and therefore efforts to reduce fuels by other means could be concentrated. We could determine where buffer areas between human settlements, industry, power lines, etc. would be most important, given the geographic distribution of fire risk. We would be in a better position to forecast where arsonists might travel to set fires, and where other factors that start fires, such as power line sparking, might be most dangerous. At present, however, we are not in a position to use these tools. Some research, development and testing are necessary.

This leads to my third point. How can we develop and test these tools so that they can be applied? Much of the expertise to do this lies with scientists within the U. S. Forest Service, at academic institutions, and in some private corporations, both for profit and not for profit. Much of the risk of the fires is borne by industries and individuals. Given the present fiscal situation in the United States, the geographic size and complexity of the problem, and the resource demands needed to address this research, development and testing, may exceed funds available from any one of these interested and affected parties. It would therefore seem most equitable and practical to develop a system of partnerships in research, development, and application of the techniques I have described. The partnerships would include the affected parties as well as those with expertise in how to develop the tools. Some of the funding for these activities could be borne by those parties most at risk, including utilities with power lines, industries with facilities and equipment in high risk zones; organizations of citizens, including cities and counties with development in these high risk areas, as well as the federal government, because of its control over so much of the nation's forested lands. I propose that these partnerships be developed soon, so that the expertise that exists within federal agencies and in academic institutions can rapidly be brought to bear on this important problem.

The problems related to forest health and its relationship to wildfire are not new. What is relatively new is the understanding of the geographical dimension of the forest health issue. Its size is daunting, not to mention the complexity of the biological and social elements. A reasonable approach could be to address a specific locality, and to integrate those modern research and technology practices I mentioned earlier into a prototype model from which we could build forest health initiatives on a larger scale and in more complex ecosystems.

Experience with the fire ecosystems of Southern California provides us with a good opportunity to demonstrate how to live and work in harmony with the natural occurrence of fire. Over 50 years of research and development about the role of fire in the environment exist, especially in Southern California. Much is known about the vegetation, weather,

terrain, and cultural elements there, and how they interact. Despite this knowledge, wildfire continues to display its devastating effects on the social and economic fabric of Southern California. Fire suppression techniques and practices have improved tremendously over the years, but the cycle of wildfire and landslides continues unabated, and the costs continue to escalate.

Project Firescope, completed about twenty years ago, was an outstanding success in combining research, technology, and practices into a unified system for fire suppression in Southern California. In fact, its major contributions are now established as standard practice throughout the United States and are being emulated by many foreign countries. The defining element of Firescope's success, in addition to its superior science and state-of-the-art technology, was the partnerships developed among all fire suppression agencies having a stake in fire suppression in Southern California. Funding for Project Firescope ended before the matter of fire risk analysis and mitigation could be addressed. The period of investment in research and technology for the fire problem virtually dried up. Political support eroded.

The problem cries out for solutions. We can capitalize on what has already been done in Project Firescope by: 1. Reestablishing and broadening its system of constructive partnerships; 2. Utilizing current science and technology, and; 3. Expanding its single perspective of fire suppression to include two essential elements, risk assessment and mitigation. Now, with the public interest in healthy ecosystems, and with current graphic evidence of the tremendous costs to human life and property before the public; it is time to reinvest in these fire-dependent ecosystems.

BIOGRAPHICAL SUMMARY

DANIEL B. BOTKIN is President, The Center for The Study of The Environment, Santa Barbara, CA, and Director of the Program on Global Change, George Mason University, Fairfax, VA 22030. From 1978 to 1993, he was Professor of Biology and Environmental Studies at the University of California, Santa Barbara (chairman of the Environmental Studies Program from 1978-1985). For more than a two decades, Professor Botkin has been active in the application of ecological science to environmental management. He is the 1991 winner of the \$50,000 first prize of the Mitchell International Prize for Sustainable Development.

Trained in physics and biology, Professor Botkin is a leader in the application of advanced technology to the study of the environment. He is the developer of the JABOWA computer model of forest growth, originally devised in 1970 and now used around the world to project the growth of a wide variety of forests. He has developed computer programs for the management of the sandhill crane, whooping crane, African elephant, the bowhead and sperm whales, as well as models of lakes and wetland ecosystems. He has used remote sensing to study forest succession. Another emphasis of his research has been the characteristics of wilderness areas, and he has carried out field research from the Serengeti Plains of Africa to the Boundary Waters Canoe Area in Minnesota. A third emphasis has been the study of the biosphere and attempts to deal with global environmental problems. His recent work includes study of the biological effects of global warming and assessment of carbon storage in forests over large regions of the Earth, including the boreal and eastern deciduous forests of North America.

Professor Botkin has been active in attempts to solve complex environmental problems. Under a bill passed by the Oregon Legislature, he is currently directing a two year study for the states of Oregon and California concerning effects of forest practices on salmon and their habitats. Previously, he directed a study of effects of water diversion on Mono Lake, under a special bill passed by the California legislature, a study which led to major changes to policy for that lake. In recent years, Professor Botkin has advised the World Bank about tropical forests, biological diversity, and sustainability; the Rockefeller Foundation about global environmental issues; the government of Taiwan about approaches to solving environmental problems, development of nature preserves, and devising data systems for environmental monitoring. He served as the primary advisor to the National Geographic Society for their centennial edition map on "The Endangered Earth."

Among his many scientific, environmental, and popular writings are his recent books: *Environmental Science: Earth As A Living Planet*, John Wiley (With E. A. Keller) (1994); *Forest Dynamics: An Ecological Model*, Oxford University Press (1993); and *Discordant Harmonies: A New Ecology for the 21st Century*, Oxford University Press (1990). His other books are: *Changing The Global Environment: Perspectives on Human Involvement*, Academic Press, Boston (1989), and *Forest Succession: Concepts and Applications*, (1981), Springer-Verlag, NY. Forthcoming is: *Our Natural History: Lessons from Lewis and Clark*, Putnam Pub., N.Y. (expected spring, 1995). In addition to his scientific articles, Dr. Botkin has published numerous newspaper and magazine articles about environmental issues.

His previous appointments include: Assistant and Associate Professor, Yale School of Forestry and Environmental Studies (1968-1974); Associate Scientist, Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA. (1975-77). He received a B.A. from the University of Rochester, M.A. from the University of Wisconsin, and a Ph.D. from Rutgers University.

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U.S. House of Representatives
Committee on
Natural Resources
 Washington, DC 20515-6201

October 13, 1994

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Honorable Bob Armstrong
 Assistant Secretary
 Land and Minerals Management
 U.S. Department of the Interior
 1849 C Street, N.W.
 Washington, D.C. 20240

Dear Mr. Armstrong:

Thank you for testifying before our joint hearing with the House Agriculture Committee on forest fires and forest health. In particular, I want to thank your staff and others within the agency for their assistance in preparing for this hearing.

It is my hope that your agency and the Forest Service will work together over the next few months on an interagency plan and set of recommendations concerning both fire policy and forest health. My recommendation to you is that you be prepared to let us know --early in the next Congress--what legislative and financial assistance you need, if any, to address forest fire and health concerns. It is important that the next Congress have time to consider and to act on your recommendations prior to the start of the 1995 fire season.

We discussed the urban/wildlands interface issues extensively at the hearing. These are clearly difficult problems with responsibilities, risks, and liabilities divided among the Federal, State and local governments, as well as property owners and the insurance industry. I hope that you and the Forest Service can develop interagency recommendations or a plan(s) of action to address these problems.

I am attaching a list of questions which we didn't have time to discuss at the hearing. Please respond at your earliest convenience.


Fire policies and forest health issues are of tremendous concern to me. It is clear that these issues are not amenable to a "one size fits all" solution; it is equally clear that these issues are very complicated. Therefore, I welcome hearing your thoughts, advice and recommendations. I also look forward to

Honorable Bob Armstrong
October 13, 1994
Page 2

continuing to work with you.

Again, thanks for your participation in and help on the hearing.
It was very productive and educational.

Sincerely,


GEORGE MILLER
Chairman

Attachment
CD/cg

QUESTIONS
FOLLOW-UP TO HEARING ON
FIRE POLICY AND FOREST HEALTH

1. What are the most significant barriers to the reintroduction of fire as a tool for resource managers?
2. During the hearing, there was some discussion about the Clean Air Act limiting your ability to do prescribed fires or to let some fires burn. What are your recommendations for dealing with this problem?
3. How do you prioritize which fires to fight? Proximity of private property? Potential economic value of timber? Accessibility of the area for personnel and equipment? Danger to life? Other?
4. Do you know how many fires this year, or what percentage of fires, started in forest areas which have been managed? In previously logged areas? In previously logged areas which have not been cleared of debris or slash? Can you compare the intensity and frequency of fires in these areas with fires which occur in roadless or relatively untouched areas? Or does this vary significantly from site to site? (I understand that the Tyee fire, for example, started and progressed with little relationship to ownership and whether the land was managed for timber production or for habitat).
5. Do you have data which demonstrate that salvage, thinning, and other treatments substantially reduce fire risk -- either intensity or frequency? Or does this vary from site to site?
6. Given financial and personnel limitations, how will you prioritize which areas to treat? How will you prioritize the purposes for which you are undertaking treatment? Timber? Forest health? Fire Risk? Roadless areas? Urban/wildlands interface concerns? Will prioritization be done on an interagency basis? What criteria will you use?
7. Some environmentalists and the independent "Eastside Forests Scientific Society Panel" recommended staying out of roadless and riparian areas; some environmentalists recommendation selecting high risk wildlands/urban interface areas as a top priority. How do you respond to these recommendations?
8. The Congressional Research Service gave me a ballpark figure of \$3.5 billion as the cost of treating 10% of Forest Service lands in the western United States. Is this figure in the ballpark for salvage sales? Other types of treatment? If not, what do you expect it will cost to treat the forests for the priorities you have established?

9. How much treatment (for reduction of fire risk and for forest health purposes) can we afford? Over what period of time? What can you realistically budget for these purposes?

10. Please give me a description of your budget for fire suppression, fire prevention, forest health, and restoration activities. Are there barriers in your budget (financial, institutional or Congressionally-imposed) which limit the activities you can undertake with regard to fire prevention, forest health, and restoration?

11. How many salvage sales are prepared? Are being prepared? Have been sold but have not been logged? What is the approximate volume? About one-third of the sold volume in California is salvage. What assurances do you have that purchasers of salvage will remove the trees in a timely and appropriate fashion to achieve your priorities for forest health and fire risk reduction rather than wait for better market conditions?

12. The FY 1995 Interior Appropriations contained an additional \$3 million for natural fuels treatment in high priority areas. Have you selected the high priority areas? If so, where are they?

13. In FY 1994, Congress appropriated \$17.1 million for cooperative fire protection efforts (technical assistance to State and local governments). The Administration requested only \$3.7 million for FY 1995. Does this leave the cooperative fire protection efforts shortchanged? As this assistance is reduced, does this mean that the Federal government assumes even more responsibility for protecting private property and fighting fires on non-federal lands?

14. The Congressional Research Service posed this question: if the federal government is the de facto fire department for non-federal lands, private property and private structures, should the federal government be able to impose appropriate requirements, such as fire proofing, site clearing, road and water access, insurance, and others in order to minimize federal costs? What are your thoughts on this subject?

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The same questions have been posed to both agencies. It is acceptable to me if you want to coordinate your responses or divide the responsibility for responding to the questions to reduce your workload. Feel free to contact me or Charlene Dougherty at 225-6042 if you have any questions.

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Honorable James Lyons
 Assistant Secretary for Natural Resources
 and Environment
 U.S. Department of Agriculture
 14th Street & Independence Avenue, S.W.
 Washington, D.C. 20250

Dear Mr. Lyons:

Thank you for testifying before our joint hearing with the House Agriculture Committee on forest fires and forest health. In particular, I want to thank your staff and others within the agency for their assistance in preparing for this hearing. George Matejko "walked the extra mile" to make sure we had the information we needed and when we needed it.

I am anxious to see your report on forest health in the near future. It is my hope that your agency and the Department of the Interior will work together over the next few months on an interagency plan and set of recommendations concerning both fire policy and forest health. My recommendation to you is that you be prepared to let us know--early in the next Congress--what legislative and financial assistance you need, if any, to address forest fire and health concerns. It is important that the next Congress have time to consider and to act on your recommendations prior to the start of the 1995 fire season.

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Again, thanks for your participation in and help on the hearing. It was very productive and educational.

Sincerely,

George Miller
 GEORGE MILLER
 Chairman

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LIST OF PUBLICATIONS NOT PRINTED

Forest Service, Department of Agriculture:

Healthy Forests For America's Future

America's Forests: 1994 Health Update

Strategic Fire and Aviation Management Goals and Actions
In Support of Ecosystem Management

Fire Related Considerations and Strategies In Support of
Ecosystem Management

National Interagency Fire Center:

Lifeline to the Fireline

These publications could not ^{be} reproduced here but may be obtained
from the agencies who produced them.

Western Forest Health Initiative September 1994

GOALS :

By September 30, 1994:

1. Propose actions to achieve priority opportunities in the West for restoring, protecting, and enhancing the health of fire-adapted forested ecosystems.
2. Identify opportunities for cooperation across land ownerships.
3. Propose actions that facilitate execution of specific projects now and within the next 24 months, as well as the long term.
4. Identify administrative and statutory impediments to achieving forest health objectives in the context of ecosystem management.
5. Develop recommendations to overcome barriers.

TEAM COMPOSITION (202-205-1752):

Phil Aune	Program Manager, Vegetation Management R&D Program, Pacific Southwest Forest Experiment Station
Frank Burch	Forester, Timber Management Staff, WO
Jim Byler	Pest Management Group Leader, Coeur d'Alene Field Office, R-1
Velma Charles-Shannon	Staff Toxicologist, Forest Pest Management Staff, WO
Sally Collins	Forest Supervisor, Deschutes N.F., R-6
Jim Fenwood	Wildlife Biologist, Wildlife and Fisheries Staff, WO
Linda Goodman	Administrative Officer, Siuslaw N.F., R-6
Rob Mrowka	Forest Ecologist, Timber Management Staff, WO
Gordon Schmidt	Assistant Director, Aviation and Fire Management, R-6
Karen Shimamoto	District Ranger, Deschutes N.F., Sisters R.D., R-6
Linda Moon Stumpff	District Recreation Officer, Los Padres N.F., Santa Barbara RD, R-5
Leslie Weldon	District Ranger, Bitterroot N.F., Stevensville R.D., R-1
Anne Zimmermann	District Ranger, Lolo N.F., Seeley Lake R.D., R-1

In addition to this team, approximately 20 people from the Washington Office have been identified in various support areas to further assist the team.

DISCUSSION QUESTIONS:

1. What is your view of the status of forest health? What do you believe the trend to be?
 - a) What are your views of the fire situation? What actions would you like to see?
 - b) What are your views of the insect and disease situation? What actions would you like to see?
2. What are the priority actions for addressing forest health, from your perspective?
3. What do you view as the primary barriers to being able to successfully address forest health concerns, and what solutions would you recommend?
4. What actions addressing forest health would you like to see accomplished within the next 24 months?
5. What opportunities do you see for cooperation and collaboration with the Forest Service in addressing forest health?

STATEMENT OF
DR. JACK WARD THOMAS, CHIEF
FOREST SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

Before the
Subcommittee on Agricultural Research, Conservation, Forestry,
and General Legislation
Committee on Agriculture
United States Senate

Concerning the Health and Productivity of the Fire-Adapted
Forests of the Western United States

August 29, 1994

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

Thank you for the opportunity to offer my views on the health and productivity of the fire-adapted forests of the Western United States. I am accompanied by Dale Bosworth, Regional Forester for the Intermountain Region and Steve Mealey, previously the Forest Supervisor for the Boise National Forest, now the Team Leader for the Upper Columbia River Basin Environmental Impact Statement Team. Also testifying for the Forest Service today is Dr. John Lehmkuhl, Research Wildlife Biologist from the Pacific Northwest Research Station.

Overview

This year's wildfires have brought to the public's attention a forest health problem that had its beginnings over 100 years ago. In Idaho, and in much of the West, the health of National Forests, other Federal lands and private and State lands is closely related to changes in the historic role of fire on those lands.

The forest health problem and associated high intensity wildfires are indicators of an ecosystem that is not in balance and the concerns will not go away when cooler and wetter fall weather arrives. The same problems will be with us next summer and each summer in the future unless we recognize that some actions are necessary to return fire to the environment in a way that achieves desired outcomes, to improve forest health and reduce the risk that fire will damage site productivity or destroy human life and property.

Background

I would like to spend a few minutes talking about the underlying causes of what has resulted in today's forest health problems.

Low Elevation Forests

Prior to the 1880's, low intensity fires, both lightning caused and those set by Native Americans, burned periodically through summer and early autumn. In the extensive, dry forests where ponderosa pine, and in some areas, western larch were the predominant species, fires burned every 5 to 30 years. These frequent fires maintained low levels of both standing and ground fuels, burning mainly along the ground rather than in the tree crowns. These ground fires perpetuated open, park-like stands of fire resistant ponderosa pine and western larch with minor components of Douglas-fir and white fir. These open, mixed species stands were much more resistant to insects and diseases.

High Elevation Forests

At higher elevation, where there is more moisture and growing seasons are shorter, the historic fire pattern was more complex. Fires occurred at longer intervals, between 50 to 300 years. Fires in this ecosystem had more variable effects, in some cases killing all the trees. In other cases, low intensity ground fires occurred. These fires produced a mosaic of forests composed of various ages and densities of Englemann spruce and subalpine fir. Forests in this mosaic were more resistant to insects and disease than the dense fir stands which dominate many of these sites today.

Lodgepole Pine

Another forest type that covers over 15 million acres in the West is lodgepole pine. This type can tolerate a wide range of climatic and soil conditions and is often found naturally in dense stands. Fires occurred historically at intervals of 60 to 300 years and were related to mountain pine beetle epidemics which periodically created vast areas of heavy fuel loads. Such heavy fuel loads, combined with the current drought that began in the 1980's, produced the large, stand replacement fires that burned over 1 million acres in the Greater Yellowstone Area in 1988.

Role of Fire Suppression and Timber Harvest

By the 1880's - with elimination of Native American burning and the settlement of western valleys, and the advent of livestock grazing - fire frequencies in many fire adapted forests decreased dramatically. Fire suppression was routinely employed to protect homes, grazing lands, and timber resources.

These fire suppression efforts became more effective after World War II due to increased access via roads, smokejumpers, helicopters, and the use of fire-retardant drops from aircraft.

The nature of the forests was also affected by timber harvesting, beginning in the early 1900's, which concentrated on the larger, more valuable species such as ponderosa pine and western larch, leaving behind the lower value firs.

Forest Health Concerns

Insects, disease, and wildfire are normal components of ecological processes in these areas. When the ecological state of the forest is dramatically altered by fire suppression, and other management practices, the role of insects, disease, and wildfire are likewise altered. The frequent, low intensity fires of the past created forests that were ecologically more stable than the forests of today. The current forest conditions, particularly in low elevation areas, are more susceptible to insects, diseases, and stand replacement fires than have been observed and recorded before.

For example, Douglas-fir and white fir now dominate these sites in densities far greater than when ground fires burned at frequent intervals. Hence the habitat for defoliating insects that attack fir species is enriched. The problem has been exacerbated by the recent and continuing 10-year drought which has increased the stress on the densely stocked trees, making them even more susceptible to insects and disease.

Taken together, the interaction of human influence and natural events resulted in an ecological condition that is frequently described as a "forest health" problem.

Forest health problems are now widespread across the inland West where open stands of ponderosa pine and, in some areas, western larch once dominated. These ecosystems make up a major portion of the

forests in Idaho, the eastern Cascades, portions of California, and the Blue Mountains in Oregon. In addition, some high elevation and lodgepole pine forests have forest health problems.

The problem culminates when such stands, with very heavy fuel loadings resulting from tree mortality, burn at very high temperatures and over extensive areas. Such high energy fires are much more damaging than former fires, because the dense fir stands, containing or dominated by dead trees killed by insects and disease, provide a means whereby fires can "ladder" into the tree crowns, including old growth trees. These "crown" fires produce higher-intensity, rapidly-spreading fires that are difficult or impossible to control. Such fires can heat soils so excessively, that for some years afterwards, nutrient levels are drastically lowered and the soils actually repel water, causing significant watershed and water quality impacts as well as with problems with tree regeneration.

Once stand replacement fires occur, all forest resources are dramatically altered. Even with aggressive restoration and rehabilitation, it commonly takes years to restore productive forest stands and ecosystems.

Urban/Wildland Interface

Everyone has seen the daily news reports that show the loss in lives and personal property caused by this year's fires in the West.

In these areas, called the "urban/wildland interface," there are also significant forest health problems and concern with wildfire effects. These problems are dramatically magnified when more and more people build homes in natural settings where fires historically burned every 5-to-30 years. Wildfires on these

lands produce enhanced risks for local, State, and Federal fire protection personnel. In deciding where to use our firefighting resources, current policy is to first protect life and property. However, the training given to wildland firefighting agencies is protection of natural resources. Therefore, they do not have the equipment to fight structural fires. In large wildland fires on urban-interface lands, city and county fire departments cannot protect every home.

What I am saying is that all of us concerned with wildfires and the loss of life and property must begin addressing basic, common sense, fire prevention and fuels reduction guidelines for these areas. For example, State and local governments need to address building codes necessary for "firewise" construction and for providing adequate access into these interface areas for evacuations and fire equipment. And, all of us involved with firefighting in this urban/wildland interface need to increase our public education and involvement to assure "firewise landscaping."

The Forest Service can only take direct actions to reduce this wildfire risk on National Forest System lands. It is for others to decide whether or how to address this risk on private lands.

However, we need to begin to find ways to reduce the wildfire risks at the urban/wildland interface. If this is not done, we will continue to find ourselves having to deploy our fire suppression resources in the urban-interface that dramatically diminishes our capacity to protect natural resource values and prescribes the fire fighting strategy which may well not be the most effective, or safest, in the overall context of natural resource protection.

Solving the Forest Health Problem

Our strategic plan, "Healthy Forests for America's Future," completed in April 1993, recognized the

seriousness of the forest health problem in the West. In this plan, a broader view of the interactions of fire, insects, disease, and ecological succession is taken as we move to the consideration and management of forests as ecosystems.

We cannot and should not wait until this broad view is described in every detail before initiating activities to reduce the wildfire risk on selected areas. For example, in areas where human safety and private property are at significant risk, salvage harvests, thinnings, and mechanical reduction of fuel loading can reduce the likelihood of high intensity wildfires. In other areas, careful use of prescribed fire after fuel loadings are reduced to acceptable levels to allow controlled burns, will be needed to reduce fuel loads.

However, in moving to address the long-term forest health problem, no single approach or action will fully address the fundamental forest health problems. This will require matching up management practices to achieve the desired future condition for each site and, in turn, the overall forest mosaic. The best foundation for determining this desired future condition is to complete a comprehensive scientific study of the processes that maintained a given forest type over time. An example of such a study presently underway is the Forest Service and Bureau of Land Management's Eastside Ecosystem Management Project for the forests of the Columbia Basin.

From these ecosystem assessments and the amendments to forest plans that will be based on this information, we predict an ecosystem management approach that uses the best scientific and technical knowledge to achieve a desired future condition. I want to be as certain as possible that the long-term actions taken to resolve current forest health problems do not result in a different set of forest health problems some decades in the future. Specific Actions to Address Forest Health Problems

As I mentioned earlier, most of the West's forest health problems seem to be clearly related to the disruption of historic fire cycles and timber harvest practices of the period 1900-1990. We have a reasonable idea what can be done to alter these conditions based on the knowledge we gained from our ecosystem management test projects and from our ongoing ecosystem assessments.

The most basic is to compensate for the lack of short-interval, recurring ground fires. This can be achieved in several ways:

1. Identify landscapes that are currently susceptible to high energy burns rather than individual stands as the first priority for treatment to reduce fire danger and to enhance forest health. All land ownerships should be considered.
2. Seek to create a mosaic of stand conditions using prescribed fire, thinning, timber harvest, or mechanical reduction of fuel loading to produce conditions within the normal range of variation for the ecosystems involved.
3. Favor fire adapted species while conducting silvicultural activities to maintain stocking densities and species composition more resistant to insect attacks, less prone to crown fires, and able to withstand low energy ground fires at prescribed intervals.
4. Increase public education and involvement programs in cooperation with local and State agencies, concerning the interaction of fire exclusion, insect and disease problems and wildfire risks presented by the current forest conditions described earlier.
5. In urban/wildland interface areas, work with local and State agencies and the home building industry regarding access to developments adjoining public lands to increase the understanding of fire safety precautions necessary in building and property maintenance for those who live there.

6. Continue to work with the Environmental Protection Agency and State agencies to provide the flexibility to use prescribed fire in compliance with the Clean Air Act. Current regulations or smoke emission limitations on prescribed burning do not acknowledge the role of prescribed burning in reducing wildfire intensity - i.e., there is a trade-off between some smoke at frequent intervals or much more smoke from wildfires. 7. Within existing resources, revisit the current budget priorities for presuppression and fire suppression activities in terms of meeting fuel reduction and forest health needs.

I am happy to report that we have established a special team that is comprehensively evaluating ways to accelerate needed actions to improve forest health. This is reflected in the attached letter from Assistant Secretary Lyons. They are currently reviewing options on specific actions that could be taken. I need to state clearly that the agency's wildland firefighting personnel and equipment are stretched beyond the limit to simultaneously protect life, property, and natural resources. As a result, in some areas, protection of natural resources is not being adequately addressed.

Summary

We are faced with a serious forest health and wildfire problem in the Intermountain West particularly on the historic 5-to-30 year fire interval sites. The question is not whether these areas will burn, but only a question of when. The human and monetary cost of continued management inaction in these areas is and will remain high for forest resources and private property in the adjacent urban/wildland interface. Priorities concerning areas to be treated should be set on the basis of protecting human life and property, economic efficiency, environmental effects, resources available, insect and disease risk, and capacity

of industry of processing woody material removed from treated sites. Obviously, some areas should be left alone. Controversial areas for treatment will likely be by-passed in the initial thrust areas selected for treatment. However, these areas should be considered for treatment as fire allows and experience accumulates.

We have the basic knowledge to begin treatment of the forest health problem in the short-term by restoring high risk sites to some semblance of their historic condition. This can be approached through a combination of salvage logging, reducing fuels through mechanical means, prescribed fire, and thinning of densely stocked stands. These techniques should be applied in high risk areas as soon as the required environmental analyses are completed and public participation has occurred. Where there are threatened and endangered species, additional consultation with the Fish and Wildlife Service and the National Marine Fisheries Service may be necessary. There is however, a distinct possibility that response will be delayed by appeals and lawsuits. We will do our best to assure full compliance with the laws and with involving the public on actions being considered.

I need to remind everyone that the solution may require the re-allocation of existing funding to begin treating forest health problems. I am confident that in many areas it makes sense to take preventative measures now, rather than suffer losses and incur greater fire and pest damage at a later, but almost certain, time.

The solutions described also contains some risks. Despite our best efforts, some prescribed fires will escape and burn more acres, and more intensely than we had planned, and may, thereby, threaten life and property. The risks may be relatively small when compared to recurrent high intensity wildfire.

I am certain that critics will question the validity of new approaches on the basis that forestry practices of the past contributed to this situation. And, they will question any management effort that includes cutting trees as a solution to a forest management problem.

Yet, we cannot, in my opinion, simply step back and wait for "nature" to take its course. I do not believe that what has happened this fire season is acceptable as a solution to the problem. These fires at this scale and intensity, are too hot, destructive, dangerous, and too ecologically, economically, aesthetically, and socially damaging to be tolerable. We have learned much about fire science since the 1950's. It is time to begin to apply what we have learned with a new vision of what we want from our forests and our forest managers.

This completes my testimony. We would be happy to answer any questions you may have.



United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

SEP 1 1994

MEMORANDUM

To: B.J. Thornberry
Deputy Chief of Staff

From: Frank Cole, Acting for Jim Douglas *Frank Cole*
Director, Hazard and Fire Programs Coordination

Subject: Forest Health Issue Orientation Package

Pursuant to your verbal request on August 25 for this office to develop a 2 - 3 page orientation paper on Forest Health, a collective response is attached. That response consist of; a DOI synthesis of the DOI land managing bureaus inputs (2 pages), the draft inputs by technical experts within those bureaus (4 pages) and a recent video, entitled Hull Mountain Fire, of a DOI - BLM forest purportedly experiencing the consequence of an unhealthy condition.

I would like to call to your attention the process employed to develop this package. Neither Department nor bureaus have a pre-existing definition of Forest Health although we envision an increasing utilization for such at Oversight Hearings. Continued redefining a recommended. I pulled together technical experts from BLM, NPS, BIA and FWS and charged them with developing a draft working definition addressing the major points you identified, viz. the nexus between forest health, fuel loading and forest protection. Recognizing that each bureau has somewhat differing mandates, philosophies and practices, it was necessary to use a Delphi approach to derive a consensus paper at the departmental level and append the individual bureau submissions to capture the various nuances.

I hope this effort provides you with the broad issues and where we are ^{regarding} ~~requesting~~ forest health in DOI. It was a pleasure to serve as acting for Mr. Douglas for the past two weeks. Thank you.

Attachments - 6

cc: PMB - Claudia P. Schechter

BRIEFING STATEMENT

PREPARED FOR: Department of the Interior
 SUBMITTED: SEPTEMBER 1, 1994

TITLE: Forest Health and Fire Management on lands administered by the Bureau of Land Management, Bureau of Indian Affairs, the National Park Service and the Fish and Wildlife Service

BACKGROUND: The Department manages a broad array of ecosystem types, such as prairies, coastal estuaries, deserts, arctic tundra and forests. Although ecosystem health is an issue in many of these environments, this is particularly true in the 94 million acres of forest managed by the Department. Interior forestlands range from boreal forests of northern Alaska to tropical forests in Hawaii and the Caribbean.

A healthy forest is one whose ecosystem components, such as species diversity and stand structure, are fluctuating within the natural range of variability. A healthy forest ecosystem is sustained by the free and unobstructed interaction of the natural processes that influenced the formation of the ecosystem. These processes include climatic cycles, animal population dynamics, forest pathogens and fire. A healthy forest can also be sustained through human disturbance as long as that disturbance is within the natural range of variability.

FACTORS CAUSING A DECLINE IN FOREST HEALTH: The type and severity of forest health problems vary considerably between different forest ecosystems in different geographic regions. They are always related to disruptions caused by human activities, which include:

- tree harvest practices that have changed species composition, stand structure and fuel characteristics
- grazing practices that have disrupted the continuity and availability of surface fuels, changing the frequency and pattern of fires
- flood control and water utilization activities that have changed hydrology and habitat characteristics
- agriculture that has caused many forests to become fragmented or removed over broad areas
- non-native insects, plants, and disease organisms that have changed forest species composition and flammability
- the expansion of the urban interface into wildlands that has changed fuel availability, fire suppression response priorities, and restricted the use of prescribed fire
- fire suppression and fire exclusion that has increased fuels and changed wildfire intensity and frequency.

FOREST HEALTH AND FIRE IN THE WESTERN FORESTS: The consequences of fire exclusion have been most severe in the western forests, particularly in those that evolved under a regime of frequent, low to moderate-intensity fires, such as the ponderosa pine and mixed-conifer communities. The Department of the Interior manages 42 million acres of these forests extending from Washington and Montana to Arizona and New Mexico.

The public perception that wildland fire is bad together with aggressive fire suppression efforts by management agencies and regulatory constraints on the application of prescribed fire have contributed to the disruption of the natural fire process in these forests.

Within these forests, fire exclusion has resulted in:

- accelerated tree mortality from competition, moisture stress and insect and disease infestations
- impaired watershed function
- changes in species composition, often favoring more fire intolerant species.
- increases in tree densities, and reduced species diversity for other plants and animals associated with the ecosystem
- major increases in the continuity and volume of both living and dead fuels

By disrupting the prehistoric pattern of naturally occurring fires, and those set by Native Americans, fire suppression has created abnormal fuel conditions favoring unnaturally large and intense wildfires that further degrade the integrity of natural ecosystems. Such wildfires are becoming increasingly common in the western forests. The erratic and unpredictable behavior of these wildfires not only endangers lives and property, but also frequently defies suppression efforts and causes a great increase in suppression costs.

POSSIBLE SOLUTIONS TO THE FOREST HEALTH PROBLEMS RESULTING FROM FIRE SUPPRESSION IN WESTERN FORESTS: Despite past and present mitigation measures, forest health problems continue to worsen in many areas. A solution to the problem will require an accelerated management program involving the following strategies:

- management-ignited prescribed fire
- prescribed natural fire
- mechanical fuel reduction
- silvicultural treatments such as salvage and stand thinning
- improved land use planning and fuels management throughout the wildland/urban interface
- flexibility in compliance with regulatory constraints on prescribed fires

These strategies are not equally applicable to all agencies or management units, but can be applied in various combinations and with different emphasis. Some progress is possible by shifting funding authority from the emergency wildfire suppression appropriation to the fire use and management appropriation, or by broadening the authority to use the Forest Ecosystem Health Recovery Fund to include stand density control and prescribed burning. Additional funding and staffing will be needed from new sources, however, to fully implement the required program without severely depleting suppression capability.

The deleterious effects of fire exclusion for over 100 years cannot be reversed quickly. Restoring healthy forests will take decades, and maintaining the natural influence of fire in restored forest ecosystems will require prescribed burning indefinitely.

Implementing an aggressive prescribed fire program will require increased cooperation from regulatory entities, including the Environmental Protection Agency, state air quality boards, state historic preservation offices, and offices that enforce the National Environmental Policy Act and archeological resource protection laws.

The solution to this problem will require integrated program coordination between federal and state forest and fire management agencies. The National Interagency Fire Center in Idaho, which has successfully coordinated fire suppression activities for over 25 years, could serve as a model for this integrated approach. Natural ecosystem processes and forest health must be managed at the landscape level, across agency boundaries, just like wildfire suppression operations.

BRIEFING:
8/26/94

BLM Division of Forestry
(202) 452-7755

Issue: Forest Health on lands administered by the Interior Department Bureau of Land Management.

Alarming trends in deterioration in forest health are surfacing on millions of acres of forests and woodlands in Oregon, Washington, California, Alaska, and the intermountain west. The issue impacts tribal lands and lands administered by the Fish and Wildlife Service and National Park Service. Many forests and woodlands are exhibiting risk conditions outside the ranges of historic variability. Several years of drought have exacerbated the problem. Quantifiable measures of forest health, such as tree mortality, insect and disease levels, fuel loads and continuity, species composition, and changes in wildfire risk and intensity all point towards declining forest health across landscapes. This problem has long range adverse implications in connection with watershed health, endangered species management, the urban interface, and future public use of the forest.

Background: The exclusion of fire from the landscape, past timber harvest practices, and other land use practices have modified forest species composition and structure. The situation impacts forests in wilderness areas as well as areas open for other forest uses. Increasing tree mortality at all elevations from Canada to Mexico are reflecting these conditions.

BLM manages approximately 50 million acres of forest of which 28 are in the lower 48 states. These forests, many of which are in the ecotone between rangeland and higher elevations, provide important wildlife and fisheries habitat, wood fiber, recreational opportunities, and water. Tree mortality is a symptom of, and not the cause of forest health problems. Fire historically played an important role in the formation and maintenance of healthy forests. In drier areas of the west where decomposition of organic material by biological processes is slow, frequent low intensity fire kept fuel loading and stocking levels low. Large severe high intensity stand destroying fires of large size are now becoming common-place.

Strategy: Stand density control, prescribed fire and salvage of mortality are some options for treatment. Salvage of portions of mortality has a short-term benefit to overall ecosystem health by reducing the potential intensity of wildfire and a long term benefit through conversion of the site to a more stable stand structure. Some mortality is a natural part of succession, and certain amounts of dead material are important for maintaining ecosystem function. We are placing priority on salvaging appropriate amounts of dead and dying timber ahead of the sale of green timber. Wherever possible, operations are encouraged which reduce stand densities by mechanical means such as fuelwood harvest and precommercial or commercial thinning, and prescribed burning.

We recognize the forest health crisis in the west, and with knowledge of the importance of these resources to the communities within and adjacent to public lands, Congress has authorized BLM to retain the federal share of timber salvage receipts (Public Law 102-381). These funds are deposited in the Forest Ecosystem Health and Recovery Fund (FEHRF), and are available for allocation through the ANF process for planning, preparation, administration, and reforestation of timber salvage sale areas. Broader authority is required before this fund can be used for additional stand treatments such as density control and fuels management. The BLM has been an active participant in forest and woodland health symposiums and workshops including assessment of forest health in eastern Oregon and Washington, the PAC Fish environmental assessment, and American Forest's Sun Valley Workshop.

Position of Constituents: The public, non government organizations, and forest industry are expressing concern. The BLM is considering entering a partnership with American Forests, NGO's, and the National Forest Foundation to provide a public education forum on the issue. Several members of Congress have expressed regional interest in this issue and legislation has been introduced pertaining to forest health.

BRIEFING STATEMENT

PREPARED FOR: Department of the Interior
SUBMITTED: AUGUST 30, 1994

TITLE: Fire Management and Forest Health in the National Park System

ISSUE:

By disrupting the ecosystem-regulating effects of naturally occurring fires, and those set by Native Americans, fire suppression has created abnormal fuel conditions favoring unnaturally large and intense wildfires that further degrade the integrity of natural ecosystems and threaten life and property. Such wildfires are becoming increasingly common. The erratic and unpredictable behavior of these wildfires not only endangers firefighters lives but also may defy suppression efforts and cause a great increase in suppression costs. This is especially true in those forests that evolved under a regime of frequent, low to moderate-intensity fires, such as the ponderosa pine and mixed-conifer forests of the West. Fire exclusion in these forests has caused dramatic changes in species composition, diversity and structure from pristine conditions. Dangerously high living and dead fuel levels, accelerated insect and disease infestations, extensive forest stands blown down by wind and unnaturally high-tree densities attest to the unhealthy condition of these forests.

STATUS:

In order to reduce these hazardous fuel situations and restore natural, healthy forest ecosystems, the National Park Service (NPS) has undertaken an aggressive program of prescribed natural fire, management-ignited prescribed fire and mechanical fuel removal. For fiscal year 1995 Parks have identified 267 hazardous fuel reduction and ecosystem maintenance prescribed burning projects to treat 206,000 acres, but the Service will be able to authorize less than half of these projects due to funding and staffing limitations.

Despite past and present mitigation measures, the forest health problem continues to worsen in many parks. A significant increase in prescribed fire will be required to slowly reverse the unhealthy forest conditions that have evolved over the past 120 years. Within the vast natural areas of many parks, prescribed fire is the only feasible tool for restoring forest health and it is by far the least expensive. The NPS program emphasizes prescribed fire because the ecological benefits of the fire process, such as nutrient recycling and habitat creation for many species that thrive in post-fire habitats, cannot be completely duplicated by mechanical manipulation of fuels and stand structure.

Increasing prescribed fire and fuels management will require significant increases in funding and staffing, along with the ability to overcome program constraints. These include: air quality regulations; resistance to the visual impacts of prescribed burning and fuel removal; fear of prescribed fire escape; National Environmental Policy Act (NEPA) requirements;

impact mitigation measures required for sensitive species and cultural resources; and the routine cancellation prescribed fire projects due to national wildfire preparedness requirements.

The prescribed natural fire program can effectively maintain the natural fire process only if lightning fires are allowed to burn within designated zones whenever nature decides to ignite them. Similarly, in order to effectively reduce wildland fuels, management-ignited prescribed fires must be carried out at a time when most fuels burn. At present, the effectiveness of both of these programs is restricted by the priority of making personnel available for wildfire suppression mobilizations. The expansion of these programs may depend on relaxing national and regional wildfire preparedness plans by allowing prescribed fire projects to continue during periods of significant wildfire activity and by creating project-dedicated crews to carry out prescribed burning and mechanical fuel removal. The creation of such "mobile tactical teams" was recommended by the Fire Policy Review Report of 1989, following the Yellowstone fires.

ISSUE BACKGROUND:

The National Park System manages 22.6 million acres of forests. These forests encompass many diverse ecosystems, extending from the boreal forests of northern Alaska to the tropical forests of the Virgin Islands and Hawaii. Maintaining these forests in a healthy condition has been a long-standing policy of the NPS. Within natural zones, current management policies direct that

Natural resources will be managed with a concern for fundamental ecological processes as well as for individual species ... Managers ... will try to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity and ecological integrity of the plants and animals.

As defined by the mission of the NPS, a healthy forest is one whose ecosystem components, such as species diversity and stand structure, are fluctuating within the range of variability that existed prior to European settlement. A healthy forest ecosystem is sustained by the free and unobstructed interaction of the natural processes that influenced the formation of the ecosystem. These processes include climatic cycles, animal population dynamics, forest pathogens and fire. Most forest ecosystems are dependent on fire to maintain their long-term stability. Fire helps sustain healthy forest ecosystems in the following ways:

- . controls the types of plants that can grow in communities and fosters optimum diversity
- . kills older trees and plant growth and starts new growth
- . regulates how much fuel accumulates in a forest so that abnormally large quantities of fuel do not threaten sustainable forest communities
- . controls nutrient cycles and energy that enters these systems
- . impacts wildlife habitat in ways that encourage growth of young shrubs and other plants needed for bird and animal food and cover
- . generally maintains insects and disease at endemic levels in the forest
- . impacts the productivity and stability of the ecosystem

PROGRAM CONTACT: Stephen J. Botti, Branch of Fire and Aviation Management, National Information Fire Center (NIFC) 208-387-5210

BUREAU OF INDIAN AFFAIRS
FOREST HEALTH BRIEFING PAPER

The BIA does not have an official agency definition of forest health. The sixteen million acres of Indian forests are not public lands. Therefore, the BIA does not define forest health, the Indian landowner does. The BIA's role is to provide technical assistance and funding for sound resource management decisions. We have assisted tribes in addressing forest health through integrated resource management planning since the early 1980's. This approach to resource management has been recently embraced by the scientific community and other land management agencies as ecosystem management. But, this is not a new concept in Indian country. The principles of ecosystem management can be expressed in terms used for generations by Indian people, i.e.: food, clothing, shelter, water, spirit, culture, seven generation before us, seven generations after us, and all things are connected.

The BIA leads all Federal land management agencies in a permanent continuous forest inventory of major forested reservations that allows for the historical analysis of the health and condition of Indian forests. This data has facilitated changing silvicultural treatments in the past ten years to imitate nature wherever it is possible. The BIA has also undertaken a massive fire planning effort over the past three years. This effort has led to a reallocation of our fire management resources and helped to identify areas where fire, both natural and man caused, can be used as a tool to maintain the forest in a desired condition.

The BIA is still not setup to easily accomplish ecosystem management. It is segregated by program functions (e.g., timber, fish, wildlife, range, water). Funding for integrated resource planning has not been secured. Earlier efforts in planning resulted in the layering of program specific management plans. Slowly we are beginning to integrate resource management. Other obstacles to integrated management are certain legislation. The Endangered Species Act is an example. In some areas we are unable to integrate management because we are required by the law to manage that area for the benefit of one specie.

The BIA has adopted integrated resource (ecosystem) management as a broad policy objective. Our customers, Indian people and tribes, want it. Tribal culture demands it. Some tribes have it, but most are waiting for the BIA to provide funding, expertise, and remove the organizational obstacles.

USFWS / Division of Refuges
(August 30, 1994)

DRAFT

Definition: "Forest Health" (DRAFT)

NOTE: THE FOLLOWING DOES NOT CONSTITUTE AN OFFICIAL POLICY STATEMENT OF THE FISH AND WILDLIFE SERVICE. IT HAS NOT BEEN REVIEWED BY ANY SERVICE PROGRAM OFFICE OTHER THAN DIVISION OF REFUGES. WITHIN THE DIVISION OF REFUGES IT IS STILL IN DRAFT FORM.

BACKGROUND: USFWS, through the National Wildlife Refuge System, administers 16 million acres of forested land. The Refuge Manual (6RM3, "Forest Management") requires forest management to perpetuate indigenous wildlife in accordance with specific refuge objectives and using appropriate management tools. Management means maintaining successional stages to further those objectives.

"Forests" exist in a seamless continuum of successional states, each supporting a unique combination of plants and animals. These states and associated plants and animals differ among forest types. Bottomland hardwoods, eastern deciduous hardwoods, upland softwoods, old growth, aspen parklands, and boreal softwoods are all forest. Yet, they differ from one another in successional stages, species composition, and underlying inorganic factors (e.g., water table, substrates, elevation, and climate) causing them. To meaningfully address the "health" of such diverse ecosystems, one must find a common thread, which in this case is the dynamic nature of such systems: They are all in constant flux, moving backwards and forwards through a process of ecological succession brought about by either natural factors (e.g., wildfire, indigenous disease agents, overbrowsing, hurricanes, avalanches) or human ones (e.g., prescribed burns, exotic insect outbreaks, timber management).

Within this context of continuous change, one must address "health" from a particular management perspective. There are three extreme possibilities: (1) timber harvest; (2) a defined objective (e.g., red cockaded woodpecker management); or (3) "wilderness" maintenance. In the first, a "healthy" forest is an even-aged monoculture where no environmental factors slow growth from seedlings to harvestable wood. In the second, a "healthy" forest is one maintained at a specific successional stages to benefit an associated resource (e.g., a woodpecker). In the third, a "healthy" forest is one allowed to experience the full dynamics of ecological succession caused by natural factors, thus providing habitat to the array of biota associated with various successional stages. The latter scenario means that various (and varying) parts of the "healthy" forest are in subclimax states often brought about by intrinsically "unhealthy" conditions such as disease, insects, overbrowsing, or wildfire. In this context, the first two alternatives would be intrinsically "unhealthy."

H. J. L. P. C.
DRAFT

USFWS/Division of Refuges: Forest Health, page 2

In fact, forests are seldom managed in any of these extremes, even in designated wilderness. Management usually involves some combination of these three extremes. In highly politicized contexts such as the Northwest old growth forests, there is frequently dissention as to what the proper combination should be. In many cases, management alternatives may be mutually exclusive. Thus, "What constitutes "forest health?" is not a valid question and cannot be answered. The terms "healthy" or "unhealthy," while catchy and popular, are without meaning in this context. A better question would be "Is the forest tract in question experiencing the ecological flux associated with the management objectives or social expectations assigned to it?" Then the logical extension becomes not a question of forest "health," but rather one of appropriate management objectives.

DEFINITION: If we must, however, stay within the context of "health," then our working definition of "Forest Health" would be the state in which a forest is experiencing the appropriate ecological flux associated with the management objectives or social expectations assigned to it. Thus, if one refers to spotted owl management and old growth forests in the Northwest, "forest health" might entail a mature forest in a near steady state without major perturbations such as lumbering or fire. If one wants early successional stages for white-tailed deer in the Southeast, heavy use of prescribed fire or limited clearcutting to stimulate new growth would promote "health." Each management scenario will entail a different set of management tools, ranging from prescribed fire to logging to total protection, to achieve a state of "health."

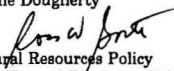
R.S. Adamcik
Wildlife Resources Branch
Division of Refuges, USFWS



Congressional Research Service • The Library of Congress • Washington, D.C. 20540

September 26, 1994

TO: Hon. George Miller, Chairman
House Committee on Natural Resources
Attn: Charlene Dougherty

FROM: Ross W. Gorte 
Specialist in Natural Resources Policy
Environment and Natural Resources Policy Division

SUBJECT: Forest Fires and Forest Health Activities

The current wildfire season that is coming to a close (at least outside of southern California) has seen numerous large wildfires, with the deaths of several firefighters and the destruction of many structures. Many observers suggest that the extent and severity of the fires is largely due to the poor health of, and the unnaturally high fuel loadings in, the national forests of the West, and assert that forest health activities that reduce fuel loadings will reduce fire control costs and fire damages.¹ This memorandum discusses fuel management, addresses questions of the benefit of fuel management for controlling wildfires and for reducing wildfire damages, and discusses the relative roles and responsibilities of Federal and State governments in wildfire protection. If you have any questions, please do not hesitate to call me at 7-7266.

FUELS MANAGEMENT

The Forest Service began moving into fuels management in the 1960s, to reduce the net cost of wildfires to society.² Although numerous techniques can be used, one of the most common is prescribed burning -- intentionally setting

¹This is not to suggest that all forest health activities will necessarily reduce fuel loadings. However, activities that achieve desired future forest conditions by removing flammable woody materials from the forest, such as by eliminating undergrowth or by harvesting dead and dying trees, would also reduce the fuel loadings.

²For a discussion of wildfire economics, see: Julie K. Gorte and Ross W. Gorte. *Application of Economic Techniques to Fire Management -- A Status Review and Evaluation*. Gen. Tech. Rept. INT-53. Ogden, UT: USDA Forest Service, 1979. (Hereafter referred to as Gorte and Gorte, *Economics of Fire Management*.)

fires within established control boundaries under prescribed conditions to burn the existing fuels when the fire can be contained. Occasionally, weather conditions change, and prescribed fires escape and cause unanticipated damages; for example, the Mack Lake fire in Michigan in May 1980 was a prescribed fire that escaped and killed one person and destroyed 44 homes and buildings.³ Despite the obvious risks, however, prescribed burning can be an efficient tool for fuel management.

Salvage timber operations can also be used to reduce fuel loadings. The Timber Salvage Sale Fund is a self-financing, permanently appropriated special account, with receipts from designated salvage sales deposited into the account for use in preparing and administering future salvage sales (and for road construction associated with those salvage sales). To the extent that salvage sales remove flammable woody materials from the forest, they can be considered fuel management activities. Furthermore, they can be legitimate tools for achieving desired forest health conditions. However, because they have to be sold, salvage sales must focus partially on removing merchantable wood, and reducing fuel loadings or achieving desired forest conditions could be compromised. In addition, salvage sales can be costly to the Federal Treasury. Salvage sales often cost more than the revenues they can generate, because of lower timber quality and higher operating costs for the buyers. Furthermore, the Treasury loses even when the sales are net cash generators, because 100 percent of receipts are deposited in the Fund for preparing and administering future salvage sales while 25 percent of receipts are returned to the States for use on roads and schools in the counties where the national forests are located -- i.e., 125 percent of salvage sale receipts are permanently appropriated, with the extra 25 percent being paid from profitable, non-salvage sales.

Because of the limitations on the use of the Salvage Sale Fund, some have proposed land stewardship contracting to achieve the desired fuel management and forest health results. As proposed in H.R. 5007, for example, land stewardship contracts would be agreements between the Federal Government and a private entity to establish desired future conditions, with the contract price paid from the sale of timber or other products, possibly supplemented with appropriations. The process is similar, in many ways, to the Timber Salvage Sale Fund, but without some of the constraints imposed by using timber sale contracts. As with salvage sales, under proper guidance, supervision, and monitoring, land stewardship contracting could be a legitimate tool for fuel management and for achieving desired future forest health conditions.

Regardless of how fuel management is funded, the economic efficiency of fuel management can and should be examined. Some research in the late 1970s by Dr. Donald Brent Wood of Northern Arizona University indicated that fuel management was economically justified only within 20 years of the timber's expected harvest; if the harvest was likely to be more than 20 years away, the fuel treatments did not offer enough protection to warrant the expense. Al-

³See: Albert J. Simard, Donald A. Haines, Richard W. Blank, and John S. Frost. *The Mack Lake Fire*. Gen. Tech. Rept. NC-83. St. Paul, MN: USDA Forest Service, 1983.

CRS-3

though I am unaware of further research on the economics of fuel management, it seems likely that the Forest Service has funded additional research.

Finally, the possible extent of fuel management and forest health activities is unclear. To date, none of the discussions of forest health, salvage sales, and land stewardship contracting have identified the likely treatment costs or the acreage needing treatment. Treatment costs (including the net cash results of salvage sales) probably range from less than \$100 to more than \$1,000 per acre; "average" treatment costs are probably about \$250 per acre. If 10 percent of the National Forest System lands in the coterminus western States -- 14 million acres -- were treated, total treatment costs would be about \$3.5 billion, roughly equal to the annual Forest Service budget. Even if the cost were spread out over a decade, forest health and fuel management might require a 10 percent increase in agency appropriations, at a time when Congress and the President are trying to reduce the Federal budget deficit. Is such an increase warranted?

FIRE CONTROL

In general, when wildfires occur, the fire organization swings into full gear to try to stop them. For several years, beginning in the very late 1970s, the Forest Service and the National Park Service both had prescribed natural fire policies. In wilderness areas and Park System units with fire management plans, wildfires burning within prescribed situations were monitored, rather than aggressively suppressed. (These policies have been colloquially known as "let-burn" policies.) In recognition of the financial and environmental costs of total fire suppression, these policies permitted the use of wildfires to achieve the goals of prescribed fires. Following the Yellowstone fires in 1988, the use of prescribed natural fire has been halted. While one can question whether the prescriptions were sufficiently responsive to burning conditions (fuel moisture, precipitation, dry lightning, winds, etc.), the termination of prescribed natural fire policies seems an overreaction to the public outcry.

The public outcry over the Yellowstone fires that has been repeated this summer is, in part, a result of the belief that all wildfires can be controlled by the fire organization. The belief is widespread, internally as well as among the public, because of our general success in controlling structural fires in urban and suburban areas and because all wildfires eventually go out. However, because of fuel types and loadings, topography, and temporary weather conditions (lasting a few hours to a few weeks), some fires simply cannot be stopped and some cannot even be influenced. Nonetheless, substantial funds are spent on efforts to suppress uncontrollable wildfires. Such efforts contribute to the belief in our ability to stop all wildfires, and lead to public to believe that any damages from wildfires only occur because of the Government has been inefficient and ineffective.

The desire to control all wildfires has also led to a belief that fast, aggressive control efforts are efficient, because fires that are stopped while small will not become the large, damaging, fearsome fires that are so expensive to control. However, only a fraction of fire ignitions ever become the large, damaging, and

fearsome fires, even without fire suppression. The belief in efficiency of fast, aggressive fire control was embodied in the 10-acre and 10:00 a.m. policies of the 1930s.⁴ These policies were terminated in the late 1970s, because research documented that the policies led to organization size and efforts that far outweighed the benefits of fire control.

The proper technique to evaluate the economics of fire control, and of fuel management, is known as "least-cost-plus-loss."⁵ This approach, in essence, says that fire control is limited by the damage prevented. Little or no fire control is economically justified for wildfires that are doing little or no damage (the idea underlying the prescribed natural fire policies) or for wildfires that cannot be controlled (because no damage can be prevented). Similarly, fuel management is economically justified only when the treatment costs are less than the benefits, either in reduced control expenditures or in reduced damages (see below). Proponents of forest health activities often assert that reduced fuel loadings can reduce fire control costs and damages. While this assertion is logical, and is supported by some anecdotal evidence, there appears to be very little research documentation of widespread fire control savings from fuel treatment. However, such documentation is essential to demonstrate the merit of forest health activities for fire control savings.

WILDFIRE EFFECTS

Wildfires can damage lands and resources. Timber is burned, although some may be salvagable. Existing forage, for livestock and wildlife, is destroyed. The reduced vegetation can increase erosion; in severe situations, such as in southern California, the result can be mudslides when the wet season returns. And burned areas are not pretty.

The damages of wildfires on lands and resources are almost always overstated, for two reasons. First, fires are patchy, leaving unburned areas within the fire perimeter. Thus, reports of acres burned, typically calculated from the perimeter, overstate the actual acres burned by 10 to 50 percent, depending on the local vegetative and weather conditions.

Damages are also usually overstated, because fires do not destroy every living thing within the burned areas. Mature conifers often survive even when their entire crowns are scorched; a few species, notably lodgepole pine and jack pine, are serotinous -- their cones will only open and spread their seeds when they have been exposed to the heat of a wildfire. Grasses and other plants are often benefitted by wildfire, because fire quickly decomposes organic matter into its mineral components (a process that, in the arid West, may require years or decades without fire), and the flush of nutrients accelerates plant growth for a

⁴The 10-acre policy was that all fires should be controlled before they reached 10 acres in size; the 10:00 a.m. policy was that, for fires exceeding 10 acres, efforts should focus on control before the next burning period began (at 10:00 a.m.).

⁵See: Gorte and Gorte, *Economics of Fire Management*.

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few growing seasons. Few, if any, animals are killed by even the most severe wildfires; rather, many animals seek out burned sites for the newly available minerals and for the flush of plant growth. And erosion is typically far worse along the bulldozer trails dug to try to control the fire than from the broad burned areas. The recognition of these ecological benefits from fire was a major factor in the end of the 10-acre and 10:00 a.m. policies and their replacement with fuel management and prescribed burning (natural and otherwise).

Nonetheless, the net damages from wildfires are generally greater when fires burn more intensely. Thus, reducing fuel loadings may reduce the net damages caused by wildfires. Proponents argue that forest health activities that reduce fuel loadings also reduce wildfire damages. Again, this assertion is logical, and is supported by some anecdotal evidence, but there appears to be very little research documenting widespread reduction in wildfire damages from fuel treatment. Such evidence is critical, however, to document the benefits of forest health activities for reducing wildfire damages.

Finally, it should be noted that emergency rehabilitation occurs on many of the large, severe wildfires. While emergency activities can prove beneficial, especially for erosion control, they may inhibit the restoration of natural ecological processes. In particular, grasses are often seeded in severely burned areas. However, the quick-growing grasses typically used may not be native to the area, and some grasses suppress tree seedling establishment and growth. Thus, emergency rehabilitation may cause as many environmental problems as it solves.

FIRE ROLES AND RESPONSIBILITIES

The Federal Government clearly has a responsibility for fire protection on Federal lands. The responsibility for protecting homes and structures on private lands in and around the Federal lands, however, is less clear. In general, the States are responsible for fire protection on non-federal lands, although cooperative agreements may shift those responsibilities when a realignment is efficient. It may be appropriate to maintain this separation, because of the differences between structural fires and wildfires. Structural firefighters use different techniques and face different hazards from wildfire fighters, but basic Forest Service firefighting courses focus on fighting wildfires.

Furthermore, the Forest Service has a cooperative fire protection program within its State and Private Forestry branch. This includes: (1) financial and technical assistance to State and other governmental organizations; (2) equipment loans of excess Federal personal property; and (3) cooperative fire prevention to provide a nationwide fire prevention program through public service advertising, education, partnerships, and other efforts. FY1994 appropriations for cooperative fire protection were \$17.1 million, but the budget request for FY1995 was only \$3.7 million, because the Clinton Administration proposed eliminating the financial assistance program (as was proposed several times during the Reagan and Bush Administrations).

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Another question is about the relative priorities in wildfire suppression. Assuming that the fires can be controlled, should Federal firefighting decisions include values at risk on adjoining or surrounded non-federal lands? If so, this is *de facto* Federal fire protection for some private lands and structures. If not, the Federal Government may be liable for damages to private lands and structures from wildfires originating on the Federal lands -- *de facto* free Federal fire insurance. In either case, it raises the question of whether Federal responsibility warrants Federal regulation -- if the Federal government is responsible for fire protection and/or insurance, regulating building materials, site clearing and planting, road construction and access, *etc.* may be appropriate to minimize Federal costs.



South Canyon Fire Investigation

of the 14 fatalities
that occurred on
July 6, 1994 near
Glenwood Springs,
Colorado





U.S. Department of the Interior
Bureau of Land Management
Washington, D.C. 20240



U.S. Department of Agriculture
Forest Service
Washington, D.C. 20090

Memorandum

AUG 19 1994

To: Claudia P. Schechter
Designated Agency Safety and Health Official,
Department of the Interior

Wardell Townsend
Designated Agency Safety and Health Official,
Department of Agriculture

From: Acting Director, Bureau of Land Management
Chief, Forest Service

Subject: Joint Report of Investigation of South Canyon Fire

In accordance with the safety investigation procedures of our respective Departments, we hereby transmit to you the attached Report of the South Canyon Fire Accident Investigation Team and the Team's Letter of Transmittal/Investigative Report. We have established an Interagency Management Review Team to serve as a steering group to review the findings and conclusions of the Investigation Team, review and refine the Team's recommendations, and propose a plan for corrective action. A copy of the corrective action plan will be submitted to you upon its completion. In the meantime, we have adopted the Team's recommendations as interim measures.

We have decided to release both parts of the Investigation Team's Report publicly for two reasons. First, after reviewing the findings and conclusions in the Report, we have adopted the Team's recommendations as interim measures, subject to further refinement by the Interagency Management Review Team. Second, the intention of both the Bureau of Land Management and the Forest Service from the outset was to release the Report in its entirety to the public, and the investigation was conducted with that intention in mind.

You will find that some information has been deleted from several of the witness statements included in the report. We have removed personal privacy information (home addresses and telephone, social security and driver's license numbers, and dates of birth) provided by several witnesses on their statement forms. Any deletions from the body of the statements reflect the witnesses' own corrections.

Mike Dombeck

Director,
Bureau of Land Management

Jack Ward Thomas

Chief,
Forest Service

Letter of Transmittal/ Investigative Report

South Canyon Fire Summary

On July 2, 1994, during a year of drought and at a time of low humidity and record high temperatures, lightning ignited a fire 7 miles west of Glenwood Springs, Colorado. The fire was reported to the Bureau of Land Management on July 3 as being in South Canyon, but later reports placed it near the base of Storm King Mountain. The fire began on a ridge, which was paralleled by two canyons or deep drainages, called the east and the west drainages. In its early stages the fire burned in the pinyon-juniper fuel type and was thought to have little potential for spread.

Dry lightning storms had started 40 new fires in BLM's Grand Junction District in the 2 days before the South Canyon fire started, requiring the District to set priorities for initial attack. Highest priority was given to fires threatening life, residences, structures, and utilities, and to fires with the greatest potential for spread. All initial attack firefighting resources on the Grand Junction District were committed to the highest priority fires. In response to a request from the Grand Junction District, the Garfield County Sheriff's Office and White River National Forest monitored the South Canyon fire.

Over the next 2 days the South Canyon fire increased in size, the public expressed more concern about it, and some initial attack resources were assigned. On the afternoon of July 4 the District sent two engines. Arriving at 6:30 p.m. at the base of the ridge near Interstate 70, the crew sized up the fire but decided to wait until morning to hike to the fire and begin firefighting efforts.

The next morning, a seven person BLM/Forest Service crew hiked 2 and 1/2 hours to the fire, cleared a helicopter landing area (Helispot 1) and started building a fireline on its southwest side. During the day an air tanker dropped retardant on the fire. In the evening the crew left the fire to repair their chainsaws. Shortly thereafter, eight smokejumpers parachuted to the fire and received instructions from the Incident Commander to continue constructing fireline. The fire had crossed the original fireline so they began a second fireline from Helispot 1 downhill on the east side of the ridge. After midnight they abandoned this work due to the darkness and the hazards of rolling rocks.

On the morning of July 6 the crew returned to the fire and worked with the smokejumpers to clear a second helicopter landing area (Helispot 2). Later that morning eight additional smokejumpers parachuted to the fire. They were assigned to build the fireline on the west flank. Later, 10 Prineville Interagency Hotshot Crew members arrived, and 9 joined the smokejumpers in line construction. The remaining members of the hotshot crew upon arrival were sent to help reinforce the fireline on the ridgetop.

At 3:20 p.m. a dry cold front moved into the fire area. As winds and fire activity increased, the fire made several rapid runs with 100-foot flame lengths within the existing burn. At 4:00 p.m. the fire crossed the bottom of the west drainage. It spread up the drainage on the west side. It soon spotted back across the drainage to the east side beneath the firefighters and moved onto steep slopes and into dense, highly flammable Gambel oak. Within seconds a wall of flame raced up the hill toward the firefighters on the west flank fireline. Failing to outrun the flames, 12 firefighters perished. Two helitack crew members on the top of the ridge also died when they tried to outrun the fire to the northwest. The remaining 35 firefighters survived by escaping out the east drainage or seeking a safety area and deploying their fire shelters.

Findings and Recommendations

The South Canyon fire at the time of the blowup affected 49 firefighters in several separate locations. All were in very hazardous situations. Firefighters who died were directly in the path of the flames. Other firefighters used escape routes to reach safety. Eight firefighters deployed fire shelters within the fire area and survived their entrapment.

Twelve Fatalities on Southwest Flank Line

The twelve fatalities resulted from a combination of factors. The crew was building a direct attack fireline downhill in Gambel oak. Surface fuels had been burned, but aerial fuels were still present and unburned. The investigation found that many of the 18 Watch Out Situations and the 10 Standard Fire Orders were either compromised, not recognized, or proper action was not taken.

Critical changes in weather and fire behavior were not recognized and not acted on soon enough for firefighters to escape. Firefighters did not receive or request spot weather forecasts from the Grand Junction District Dispatch.

Even though some of the firefighters expressed concern that they were at risk building the fireline downhill, they had enough confidence that they could stop the fire near the bottom of the canyon. Some firefighters knew a cold front was approaching and thought that they could line the west flank before the cold front arrived. Unfortunately, the cold front arrived before the fireline was completed.

Two Helitack Fatalities

The two helitack members were managing helicopter operations at Helispot 2. The escape route to the designated safety zone at Helispot 1 was blocked by the rapidly moving fire. Therefore, crews were directed off the ridge into the east drainage. The two helitack members ran north up the ridgeline to escape the fire. In this attempt, they were overcome by the fire.

A. Weather, Fire Danger, and Fire Behavior

Critical fire behavior and fire weather indicators of blowup conditions were not recognized by either fire managers or firefighters. Fire weather forecasts were not effectively communicated to the

firefighters on the fire, and no system was in place to alert people on the fire of significant weather changes. Although a fire weather meteorologist at the Western Slope Fire Coordination Center was available to give forecasts and briefings for specific wildfires, he was not used on the South Canyon fire. Within the firefighting organization there was also considerable confusion about the difference between what is meant by a red flag watch and a red flag warning.

Recommendations:

1. A national interagency review should be conducted of the National Weather Service's Red Flag Program, with emphasis on the number of watches and warnings issued. Distinguish clearly between red flags for cold fronts and high winds and red flags for lightning.
2. A fire behavior analyst should be available or requested whenever a fire weather meteorologist is requested for a fire coordination center. A fire behavior analyst can relate the weather forecast to how fires burn in terms of rate of spread, flame length and fireline intensity. These are terms that firefighters understand. An alternative is establishing regional centers for consolidating and interpreting fire behavior and weather information during periods of high fire activity.
3. Fire weather forecasts must be communicated to firefighters on initial attack and extended attack incidents.
4. Spot weather forecasts should be requested for fires that have potential for extreme fire behavior or exceed initial attack or are located in areas for which red flag warnings have been issued.
5. NOAA Weather Radio forecasts should not be substituted for fire weather forecasts. NOAA Weather Radio does not broadcast fire weather forecasts, but forecasts directed to the general public.
6. A national interagency strategy and implementation plan should be developed to improve technical transfer of fire danger and fire behavior technology.
7. The National Weather Service fire weather program is a critical part of the Interagency Fire Management Program. It is essential that it be maintained at present levels to ensure firefighter safety.
8. An organized live fuel moisture sampling network should be established for Gambel oak. Strategy and tactics should be adjusted on the basis of this information.

NOTE: The Gambel oak fuel type has been directly responsible for 17 firefighter fatalities since 1976 on the BLM Grand Junction District.

B. Leadership, Attitudes, and Training

A common response to situations of this nature is to recommend additional training. Although there are several specific training needs related to fire shelters, we believe that training is not the core issue. Rather it is one of implementing the training all firefighters receive.

Attitudes and leadership set the tone for execution of the training received. There is a dire need to create a passion for compliance with the basics of safe fire suppression. This will occur only if leadership sets and demonstrates a clear commitment to safety.

Recommendations:

1. Attitudes and leadership are universal factors that influence safe fire suppression. The Interagency Management Review Team should explore actions that will strengthen sensitivity to basic safety standards so they permeate every fiber of our strategy, tactics, and basic fire operations.
2. The Interagency Management Review Team needs to evaluate current training to assure emphasis is placed on the basics of fire behavior, firefighting strategies and tactics, the 10 Standard Fire Orders, and the 18 Watch Out Situations.
3. The South Canyon fire incident should be used in the development of a training exercise for use by agency administrators, fire managers, dispatchers, and firefighters. The training exercise should be developed by field level firefighters.
4. The Investigation Team recommends that the National Wildfire Coordinating Group develop mandatory fire shelter training courses and implement them prior to the 1995 fire season. The main course should be required every 2-4 years with yearly refresher training. Courses should emphasize timed practice deployments, proper deployment practices, deployment in high winds, and site selection.
5. The Interagency Management Review Team should charter a group to develop guidelines for adequate deployment sites and safety zones in different heat and flame scenarios to show the value and the limitations of the fire shelters. Followup training should include recognition of survivable shelter deployment sites and safety zones.
6. Fire behavior and fire weather concepts should be reviewed in training each year for all fire managers.
7. "Standards for Survival" and "Look Up, Look Down, Look Around" training materials were developed in response to previous entrapment investigations. The Team recommends that all firefighters be required to take these subjects and review them every 2 years to maintain firefighting qualifications.
8. Fire shelter training materials should be revised to stress discarding packs and equipment when escape is questionable and that it is no longer acceptable to take packs and equipment into fire shelters.

C. Management Support and Dispatch Coordination

The Investigation Team concentrated on the direct causes of the fatalities on the South Canyon fire. We identified a number of findings related to management support and dispatch coordination. We also identified incident management, control mechanisms, and support structure as contributory causes.

Recommendations - Management Review

1. We recommend a management review of the Fire and Aviation Programs for the BLM State of Colorado to address policy direction; accountability mechanisms; training and qualifications of personnel; and staffing, including budget, workload, and FTE controls.
2. The review should also address the implementation of National Wildfire Coordinating Group's work, rest, and rotation guidelines.

D. Mobilization Planning for Above-Average Fire Seasons

Droughts are part of the climatological pattern, particularly in the western United States. Colorado's West Slope was in extreme drought as determined by the Palmer Drought Index. Glenwood Springs has had 8 straight months of below-normal precipitation. Precipitation since October 1993 had been 58 percent of normal.

The Grand Junction District was experiencing a severe fire season. Fire danger indices in early July were at maximum recorded levels in 21 years. As of early July the number of fires were twice the annual average. Type I and Type II incident management teams had responded to five times the number of fires that they would respond to in a normal year.

Recommendations:

1. As part of the management review, special attention should be given to analysis of how all federal, state, and local firefighting organizations plan and conduct fire operations to respond to wide variations in fire severity from season to season.
2. Procedures should be established to monitor the level of drought at representative fire weather stations. Present fire danger levels should be compared to historic averages and worst case conditions, and the selection of appropriate suppression response should be adjusted on the basis of this information.

Conclusion

Firefighters and fire managers are engaged in a complex business with inherent risks, which requires skill, good judgment, and the ability to make difficult decisions. The South Canyon fire tragedy resulted from a series of judgments, decisions, events, and actions with serious cumulative impacts.

No one person or unit recognized the interaction of all factors on the incident that resulted in the entrapments. Firefighting safety fundamentals were compromised during a period of extreme weather and fire behavior in a highly flammable fuel type. This situation, compounded by failure to provide critical fire weather and fire behavior information to the firefighters, was the primary cause of the injuries and fatalities.

Executive Summary

The Incident

On July 2, 1994, during a year of drought and at a time of low humidity and record high temperatures, lightning ignited a fire 7 miles west of Glenwood Springs, Colorado. The fire was reported to the Bureau of Land Management on July 3 as being in South Canyon, but later reports placed it near the base of Storm King Mountain. The fire began on a ridge, which was paralleled by two canyons or deep drainages, called in this report the east and the west drainages. In its early stages the fire burned in the pinyon-juniper fuel type and was thought to have little potential for spread.

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Over the next 2 days the South Canyon Fire increased in size, the public expressed more concern about it, and some initial attack resources were assigned. On the afternoon of July 4 the District sent two engines. Arriving at 6:30 p.m. at the base of the ridge near Interstate 70, the crew sized up the fire but decided to wait until morning to hike to the fire and begin firefighting efforts.

The next morning, a seven person BLM/Forest Service crew hiked 2 1/2 hours to the fire, cleared a helicopter landing area (Helispot 1) and started building a fireline on its southwest side. During the day an air tanker dropped retardant on the fire. In the evening the crew left the fire to repair their chainsaws. Shortly thereafter, eight smokejumpers parachuted to the fire and received instructions from the Incident Commander to continue constructing the fireline. The fire had crossed the original fireline, so they began a second fireline from Helispot 1 downhill on the east side of the ridge. After midnight they abandoned this work due to the darkness and the hazards of rolling rocks.

On the morning of July 6 the BLM/Forest Service crew returned to the fire and worked with the smokejumpers to clear a second helicopter landing area (Helispot 2). Later that morning eight more smokejumpers parachuted to the fire and were assigned to build the fireline on the west flank. Later, ten Prineville Interagency Hotshot Crew members arrived, and nine joined

South Canyon Fire

the smokejumpers in line construction. Upon arrival, the remaining members of the hotshot crew were sent to help reinforce the fireline on the ridgetop.

At 3:20 p.m. a dry cold front moved into the fire area. As winds and fire activity increased, the fire made several rapid runs with 100-foot flame lengths within the existing burn. At 4:00 p.m. the fire crossed the bottom of the west drainage and spread up the drainage on the west side. It soon spotted back across the drainage to the east side beneath the firefighters and moved onto steep slopes and into dense, highly flammable Gambel oak. Within seconds a wall of flame raced up the hill toward the firefighters on the west flank fireline. Failing to outrun the flames, 12 firefighters perished. Two helitack crew members on the top of the ridge also died when they tried to outrun the fire to the northwest. The remaining 35 firefighters survived by escaping out the east drainage or seeking a safety area and deploying their fire shelters.

The Investigation

Within 3 hours of the blowup, an interagency team was forming to investigate the entrapment on the South Canyon fire. The team first met on the evening of July 7. Team members were given their assignments, and the team presented a charter to the Chief of the USDA Forest Service and the Director of the Bureau of Land Management. Les Rosenkrance, BLM's Arizona State Director, was designated team leader.

In the next few days the team investigated the fire and fatality sites and began a series of 70 interviews with witnesses. In addition, the team met once or twice a day to discuss progress, clarify assignments, plan their report, and review their findings. On July 22, with the interviews and much of the investigation report completed, the team adjourned. The following week some team members met in Phoenix, Arizona to complete work on the incident overview. On August 9-11, the team reconvened to review a draft of the completed report in preparation for its publication.

Causal Factors

Direct Causes

The Investigation Team determined that the direct causes of the entrapment in the South Canyon fire are as follows.

Fire Behavior

Fuels

- Fuels were extremely dry and susceptible to rapid and explosive spread.
- The potential for extreme fire behavior and reburn in Gambel oak was not recognized on the South Canyon fire.

Weather

- A cold front, with winds of up to 45 mph, passed through the fire area on the afternoon of July 6.

Topography

- The steep topography, with slopes from 50 to 100 percent, magnified the fire behavior effects of fuel and weather.

Predicted Behavior

- The fire behavior on July 6 could have been predicted on the basis of fuels, weather, and topography, but fire behavior information was not requested or provided. Therefore critical information was not available for developing strategy and tactics.

Observed Behavior

- A major blowup did occur on July 6 beginning at 4:00 p.m. Maximum rates of spread of 18 mph and flames as high as 200 to 300 feet made escape by firefighters extremely difficult.

Incident Management**Strategy and Tactics**

- Escape routes and safety zones were inadequate for the burning conditions that prevailed. The building of the west flank downhill fireline was hazardous. Most of the guidelines for reducing the hazards of downhill line construction in the Fireline Handbook (PMS 410-01) (see box on next page) were not followed.
- Strategy and tactics were not adjusted to compensate for observed and potential extreme fire behavior. Tactics were also not adjusted when Type 1 crews and air support did not arrive on time on July 5 and 6.

Safety Briefing and Major Concerns

- Given the potential fire behavior, the escape route along the west flank fireline was too long and too steep.
- Eight of the 10 Standard Firefighting Orders were compromised.
- Twelve of the 18 Watch Out Situations were not recognized, or proper action was not taken.
- The Prineville Interagency Hotshot Crew (an out-of-state crew) was not briefed on local conditions, fuels, or fire weather forecasts before being sent to the South Canyon fire.

Involved Personnel Profile

- The "can do" attitude of supervisors and firefighters led to a compromising of Standard Firefighting Orders and a lack of recognition of the 18 Watch Out Situations.
- Despite the fact that they recognized that the situation was dangerous, firefighters who had concerns about building the west flank fireline

South Canyon Fire

questioned the strategy and tactics but chose to continue with line construction.

Equipment

- Personal protective equipment performed within design limitations, but wind turbulence and the intensity and rapid advance of the fire exceeded these limitations or prevented effective deployment of fire shelters.
- Packs with fuses taken into a fire shelter compromised the occupant's safety.
- Carrying tools and packs significantly slowed escape efforts.

Contributory Causes

The following factors contributed to the entrapment on the South Canyon fire.

Incident Management and Control Mechanisms

- The initial suppression action was delayed for 2 days because of higher priority fires on the Grand Junction District.
- Air support was inadequate for implementing strategies and tactics on July 6.

Support Structure

- The above-normal fire activity overtaxed a relatively small firefighting organization at the Grand Junction District and Western Slope Fire Coordination Center.
- Detailed fire weather and fire behavior information was not given to firefighters on the South Canyon fire.
- Dispatching procedures and communications with the Incident Commander did not give a clear understanding of what resources (crews and air support) would be provided to the fire in response to requests and orders.
- Unclear operating procedures between the Western Slope Fire Coordination Center and the Grand Junction District's fire organizations resulted in confusion about priority setting, operating procedures, and availability of firefighting resources, including initial attack resources (i.e. helitack firefighters, smokejumpers, and retardant aircraft). This lack of definition limited the effectiveness in the timing and priority of the suppression of the South Canyon fire.
- The lack of Grand Junction District and Colorado State Office management oversight, technical guidance, and direction resulted in uncertainty concerning the roles and responsibilities of the Western Slope Fire Coordination Center and the Grand Junction District.

Fire and Aviation Management



**Special Briefing
to the
House of Representatives
Monday, August 8, 1994**

Status of Fire Emergency

Information:

Current Situation: (202) 205-1450

General Fire Program: (202) 205-1483

**Briefing Paper: Fire and Aviation Management
State and Private Forestry
USDA Forest Service**

- A. Fire Related Key Messages.** The following are key messages stressed throughout the 1994 fire season:

Forest Health

Many wildland ecosystems are dependent upon periodic, low intensity fire.

In the prolonged absence of this type fire, these ecosystems undergo changes in species composition and structure that increase the risk of epidemic outbreaks of insects and disease as well as catastrophic wildfire.

An extended drought period in combination with decades of fire suppression and past management activities have contributed to a decline in forest health. This is evident in many of the long-needle pine forests of the West.

Wildland Fuel Conditions

Forest fuels (organic material that will burn) have built up significantly following nearly a century of fire exclusion.

Unnaturally high fuel conditions set the stage for severe wildfire. The risk is increased during periods of drought.

Prescribed Burning and Fuel Treatments

Reducing fuels reduces the risk of wildfire. Fuel reduction can be accomplished through the use of prescribed burning.

Prescribed burning is the controlled application of fire by trained specialists under predetermined conditions in order to meet specific objectives.

Objectives of prescribed burning include reducing the amount of fuels on the ground and the larger benefits of improving forest health and ecosystem management.

Human Caused Wildfires

In the western United States, lightning causes 65 % of the wildfires.

Nationwide, 90% of all wildfires are human caused. The major causes are arson (26%) and debris burning (24%).

Wildland/Urban Interface

Today, more and more people are choosing to live within or adjacent to forested lands.

In order to minimize the danger of wildfire to homes and forest lands, each must be maintained in a safe/healthy condition. This can be accomplished by:

In Forest:

Reduce fuels through management actions such as prescribed burning and thinning. This will make the forest less susceptible to severe wildfire from any cause.

Homeowners:

Trim the brush around the home.

Use fire-safe material on the roof.

Landscape using fire resistant vegetation.

Avoid locating in a high risk area such as steep, narrow canyons.

Do not limit access--avoid narrow, one-way roads without turnarounds.

For more information call:

**Fire and Aviation Management
Mary Jo Lavin, Director
(202) 205-1483**

B. The 1994 Fire Season.

This fire season is turning out to be one of the most severe in history as measured by:

Unusually long-lasting fire activity in the Southwest.

• Very intense activity in the central Rocky Mountain area.

Early, large fire activity in the Pacific Northwest - Northern Region areas.

Anticipated length of fire season.

There are many factors contributing to the high level of fire activity:

Extensive areas of accumulated fuels due to:

- insect killed timber
- infrequent occurrence of low intensity fire over an extended period of time
- increase in development along wildland/urban interface

Persistent drought over large areas that have resulted in:

- Higher risk for new fire starts.
- Potential for multiple fires over widespread geographic areas.

Large numbers of dry lightning storms that have resulted in multiple ignitions over wide areas.

Current Situation Assessment:

Critically high fire danger indices are being observed in California, Pacific Northwest, Intermountain West, and the Northern Rockies.

For this time of year, many more large fires are occurring than would be normally expected.

Unusually high numbers of starts threaten to overwhelm initial attack.

Military crew and aircraft support can increase, but there are indications that military resources may become more limited.

Fire managers have activated large fire activity management control mechanisms including Multi-Agency Coordinating (MAC) Groups, Area Commands, Expanded Coordination Centers, and Incident Management Teams to strengthen lines of communication, make better use scarce resources and to prioritize efforts.

We are training many more crews from State resources to increase the availability of firefighters. Some shortages of trained Strike Team Leaders may occur.

Some firefighters and managers are beginning to show signs of stress and fatigue. We will adhere to "Safety First" principles to protect our people by requiring rest and relaxation, stand down days, etc.

Outlook:

With 45 to 60 days of fire season remaining, there is the potential for multiple 100,000 acre plus fires simultaneously occurring throughout the Pacific Coastal States as well as the Intermountain West.

East-side Spotted Owl Habitat Conservation Areas (HCA's) and PACFISH corridors are presently at risk. Later, West-side HCA's and salmon corridors will be at risk.

Anticipate the use of alternate fire fighting strategies in wilderness to make resources available for fires in higher value areas. The result would be larger burned acreage in wilderness.

Anticipate intensifying public concern for property loss and smoke impacts.

Potential for increasing risks to firefighter safety and public and private property.

Anticipate higher forest resource losses where suppression priorities in urban/rural interface areas require private property and structure protection.

Commitments:

Keep Congress and the public informed of potential risks and developments.
Maintain strategic offensive to control mobilization decisions and personnel welfare.

Communicate openly and constructively with cooperating agencies at all organizational levels.

Emphasize prevention and strong initial attack capabilities.

Establish firm prioritization criteria for large fire mobilization.

For current fire activity information call:

Fire Information Center
(202) 205-1450

- C. **Coordinating Mechanisms.** The following are ways we coordinate to maximize our ability to fight wildland fires:

National Interagency Fire Center (NIFC)--Located in Boise, Idaho, its principle mission is the cost-effective and timely coordination of national **emergency response for wildfire suppression**. This is accomplished through planning, situation monitoring and expediting orders for resources among the cooperating agencies. Federal agencies are USDA Forest Service, Bureau of Land Management, National Park Service, Fish and Wildlife Service, Bureau of Indian Affairs and the National Weather Service. In addition, a representative from the National Association of State Foresters is involved during periods of high activity.

During periods of national fire emergencies, the Multi-Agency Coordination Group (MAC Group) is activated to assess resource needs and availability and prioritize allocation of resources. The MAC Group is comprised of representatives of each cooperating federal agency and the National Association of State Foresters.

National Wildfire Coordinating Group (NWCG)--an operational group authorized by the Secretaries of Agriculture and Interior designed to coordinate fire management programs of federal, state and local agencies to avoid duplication of effort and facilitate cooperation. The group provides a formalized system to agree upon **standards** of organization, training, equipment, operations and other facets of wildland fire management.

National Association of State Foresters (NASF)--an association comprised of the directors of the fifty state and three territorial forestry agencies. Its focus is the stewardship, management and protection of state and private lands. As a national organization, NASF participates in the MAC Group and the NWCG to provide a cooperative and coordinated effort toward the protection of the nation's forest resources.

Regional Fire Compacts--Because major fires occur infrequently in many states, it may be difficult for some states to maintain the training, equipment and personnel needed to respond. Several Regional Compacts have been formed to provide:

- mutual aid among member states and procedures to make it available
- support for the development of integrated wildfire suppression plans
- a central agency to coordinate the services needed by member states

The Forest Service provides assistance and coordination to standing committees developed by the Compact on issues pertaining to operations, training, fire prevention, equipment, etc.

FEMA--States may seek financial assistance through FEMA following a Presidential wildfire disaster declaration. The Forest Service provides support as the Principle Advisor to FEMA in any wildfire after a State makes a request for assistance. FEMA makes the final determination of eligibility and funding.

D. Terminology. The following are key terms used in fire fighting:

Red-flag warning--term used by fire weather forecasters to indicate special or adverse weather conditions such as high winds or dry lightning, that present a high probability of extreme fire behavior

Extreme fire behavior--erratic burning characterized by high rates of spread, prolific crowning and/or spotting, fire whirls, etc.

Spotting--the process where sparks or embers are carried by the wind and ignite new fires beyond the main fire.

Initial attack--the first action taken to suppress a fire by ground or air.

Incident commander--individual responsible for management of all operations on a fire or fire complex.

Fire complex--two or more fires in close proximity, managed under one incident commander.

Hotshot crew--specially trained, highly skilled firefighters used primarily for fire line construction, usually as part of an initial attack.

Fireline--a cleared or treated strip used to control a fire's spread. Commonly, a line created by removing all flammable material, scraping or digging to mineral soil.

Containment--completion of a fireline around a fire.

Retardant--a slurry of chemicals (primarily fertilizer) and water dropped from aircraft to cool an actively burning area, assist in the establishment of firelines or to protect improvements.

Burning out--a suppression action used to eliminate unburned fuels within firelines after containment.

Mopup--extinguishing or removing burning material near firelines after an area has burned to make it safe and/or to reduce smoke.

E. **South Canyon Fire Fatality Investigation.** Following is an update on the status of the investigation:

The investigation team has completed the field work and is currently preparing it's report.

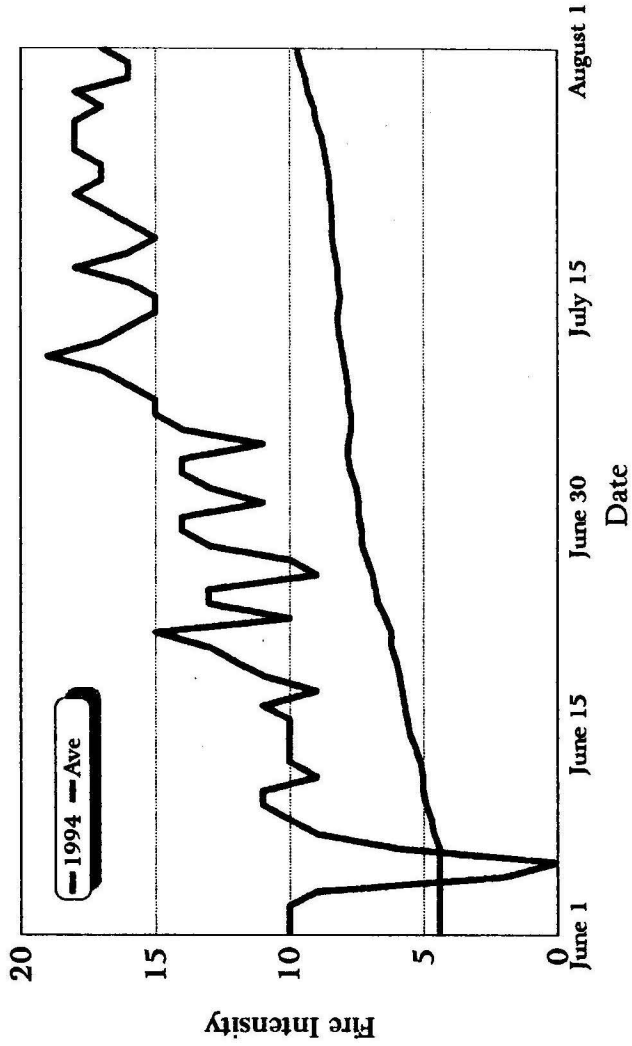
The final report is scheduled to be released August 22 at a press conference in Denver.

Chief Thomas and Director Dombek will hold the conference and charter a management review to address the report's findings.



Lake Chelan Area

Fire Intensity, 1994 vs Average



Fire & Aviation Management

Fact Sheet

United States Department of Agriculture • Forest Service

Preparedness Levels

Preparedness levels are dictated by burning conditions, fire activity, and resource availability. Resource availability is the area of most concern.

Why are they established?

- A. To identify the level of wildland fire activity, severity, and resource commitment nationally.
- B. To identify actions to be taken by the National Interagency Fire Center (NIFC) to ensure an appropriate level of preparedness for the existing and potential situation.
- C. To modify or curtail Geographic Area Fire Management activities when essential to ensure national preparedness or in response to the national situation.

Level I:

- No large fire activity nationally.
- Most geographic areas have low to moderate fire danger.
- Little or no commitment of National Resources.

Level II:

- One geographic area experiencing high fire danger.
- Numerous Class A, B, & C fires occurring or a potential exists for escapes to larger (project) fires.
- Minimal mobilization of resources from other geographic areas occurring.
- The potential exists for mobilizing additional resources from other geographic areas.

Level III:

- Two or more geographic areas experiencing incidents requiring a major commitment of National Resources.
- High number of fires becoming Class D and larger.
- Additional resources are being ordered and mobilized through the National Interagency Coordination Center (NICC).
- Type I Teams are committed in two or more areas or 300 crews are committed nationally.

Level IV:

- Two or more geographic areas experiencing incidents requiring Type I Teams.
- Competition exists for resources between geographic areas.
- 450 crews or nine Type I Teams committed nationally.

Level V:

- Several geographic areas are experiencing major incidents which have the potential to exhaust all Agency Fire Resources.
- 625 crews committed nationally.

<u>FIRE SIZE CLASS</u>	<u>ACRES</u>
A - B	.25 - 9
C	10 - 99
D	100 - 299
E	300 - 999
F	1,000 - 4,999
G	5,000+

Type I and Type II Teams

The primary difference between a Type I and a Type II Incident Management Team is a matter of size and complexity. The factors that affect the decision to go to a Type I operation and thus, a Type I Incident Management Team, are extremely variable and depend on the location, threat to life and property, political, organizational, values-at-risk, fuel types, jurisdictional, topography, and policy.

A Type I Incident Management Team, generally speaking is composed of the highest level of experience and training needed to manage an emergency or disaster. Team composition is interagency in nature. There are as many as 18 Type I Interagency Management Teams available nationwide, 12 months a year. Not only do these Incident Management Teams respond to fires but also to any natural disasters. Examples include the 1994 Los Angeles Earthquake, 1992 Hurricane Andrew in Florida, the Mid-Western Floods of 1993, and Typhoon Incidents in Kauai, Hawaii.

A Type II Incident Management Team has several of the characteristics of a Type I Incident Management Team. However, Type II Teams are generally organized to respond to emergencies or disasters in their local areas (counties, states, etc.). The level of experience and training is extensive but may not be as high as Type I Teams. Type II Teams may be composed of single agency or interagency personnel. The number of Type II Teams in any one local area may vary with need.

Type I and Type II Crews

Type I Crews are primary firefighting forces financed from fire management funds. There are a minimum of 66 Type I Interagency Hotshot Crews located throughout the country during fire season. The crew normally consists of 20 people. To be designated a Type I crew, more than 90 percent of the crew members have a minimum of one season fire experience. Crew members receive a minimum of 80 hours suppression training annually. Type I crews are specifically trained to work together as a unit. The crews are capable of being dispatched within 2 hours. Air or ground transportation is assured for each crew. Examples of these crews are: Smokejumpers and Interagency Hotshots.

Type II Crews are organized as the fire situation dictates. There are 431 crews available nationwide during fire season. The crew normally consists of 20 people. Generally speaking, Type II crew members have jobs outside of firefighting. They are recruited prior to the fire season and given basic firefighting training. Examples of these crews are Native Americans, migrant workers, regular agency personnel, and prison crews. Travel and departure arrangements vary with the fire location and assignment.

Fire & Aviation Management

Fact Sheet

United States Department of Agriculture • Forest Service

Palmer Drought Severity Index Map

The Palmer Drought Severity Index is a commonly used method for tracking wet or dry periods. This index is a water balance equation that tracks precipitation and stored soil moisture (supply) along with potential evapotranspiration, soil drainage and runoff (demand). Input consists of the weekly or monthly temperature averages and the precipitation totals for each climate division across the United States. Numeric figures derived from the equation are summarized as follows:

<u>INDEX</u>	<u>CLASSIFICATION</u>
4.00 or more	Extreme moist spell
3.00 to 3.99	Very moist spell
2.00 to 2.99	Unusually moist
1.00 to 1.99	Moist spell
0.50 to 0.99	Incipient moist spell
-0.49 to 0.49	Near normal
-0.99 to -0.50	Incipient drought
-1.00 to -1.99	Mild drought
-2.00 to -2.99	Moderate drought
-3.00 to -3.99	Severe drought
-4.00 to less	Extreme drought

FEDERAL WILDLAND FIRE MANAGEMENT PROGRAM

**U.S. DEPARTMENT OF AGRICULTURE
U.S. Forest Service**

**U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Fish and Wildlife Service
National Park Service
Bureau of Indian Affairs**

STATES

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Program Overview

Introduction

The Department of the Interior wildland fire management program consists of four bureau programs, linked through a common appropriation, extensive interagency agreements and operations, and a Department-level program coordinator. Bureau programs are an integral part of each bureau's field, regional, and national organizational structures. The four Interior bureaus, along with partners in the Forest Service and in the states, have developed a strong interagency program that minimizes duplication and relies heavily on mutual aid and assistance. Common training, qualification, equipment, and operational standards assure nearly seamless interagency participation in wildland fire management operations and suppressing wildfires.

Program Purposes

The purposes of the DOI fire management program are:

- to safely and efficiently execute wildland fire protection responsibilities and
- to use prescribed fire to help achieve resource management objectives.

Program Vision

A program dedicated to an interagency approach to fire management possessing the policies, organization, technology and facilities to safely and effectively manage the program into the 21st century.

Program Missions

- Manage a safe, effective and accountable wildfire protection program.
- Develop and maintain national firefighting standards.
- Develop fire management policy.
- Coordinate activities with other Federal and state agencies.
- Standardize operational and administrative procedures.
- Manage the use of fire for resource benefit.
- Support non-fire emergencies.

Fire Management Policy

The Departments of the Interior and Agriculture share a common policy regarding wildfire suppression. The highlights of this policy include:

- The priorities of the United States for suppression of wildfires are first, the protection of life; second, protection of property; and third, the protection of natural and cultural resources.
- Wildfire losses are held to the minimum through timely and effective suppression action consistent with the values at risk.
- The Departments coordinate and cooperate with each other and with state and local agencies for maximum efficiency and effectiveness.
- Each Department, individually, and jointly wherever possible, provides for and maintains an appropriate state of preparedness and adequate resources for wildland fire suppression and management.
- Fires occurring on lands under the jurisdiction of the Departments, or on land for which the Departments have fire protection responsibilities, are either classified as wildfires or as prescribed fires.
- Whether on or adjacent to lands administered by the Departments, wildfires which either threaten life, property and the public's welfare, or threaten to exceed suppression capability, will be considered emergencies and their suppression given priority over normal Departmental programs. No wildfire suppression action should expose firefighters to life-threatening situations.
- All wildfires will have an appropriate suppression response that most efficiently meets management direction and objectives. Through preparedness, training, and appropriate suppression strategies, the total costs of wildfires, including expenditures of public funds and damage to property, resources, and other values, will be minimized.
- Under existing arrangements, the Departments assist each other in fire suppression activities on each other's lands. There is no cross-billing or reimbursement for fire suppression and related support services. The Departments cooperate with other Federal, State, and local government entities and landowners in the vicinity of public and Indian lands through formal and informal arrangements in order to minimize loss of life, property, and resource values and to maximize preparedness and suppression efficiency.

Budget Summary

Funding for wildland fire is appropriated through two no-year appropriation accounts (fire management and suppression operations) housed in the BLM, which then *allocates* funds to each of the three other bureaus. BLM exercises no

discretion in these allocations. Recent funding and FTE levels are shown in the following table.

Department of the Interior Funding
(\$ in thousands)

	1993 Actual	1994 Enacted	1995 Pres. Budget
Fire Management	128,238	117,143	115,468
Suppression*	62,360	116,674	121,176
Total	190,598	233,817	236,644
FTEs (budgeted)	2,114	2,028	1,964

*NOTE: The President's Budget and Enacted levels for suppression are based on the average of the previous ten years, updated to current year dollars.

In 1993 the four bureaus employed an estimated 3,478 people, including 842 permanent full-time and 2,636 seasonals. In addition, each bureau hires emergency firefighters under separate authority to work as needed on specific fires; these individuals do not count as FTEs.

Management Summary

- Each bureau (BLM, FWS, NPS, and BIA) has a fire management organization as part of its line operating organization. Program management and oversight responsibility for each bureau lies with a division or branch of fire management in each bureau. No common policy oversight of fire programs occurs below the Secretarial level, given the four bureaus and three program assistant secretaries involved.
- The four bureau fire directors, with the Departmental Fire Program Coordinator, comprise the Interior Fire Coordination Committee (IFCC) that serves as a clearinghouse on operational policy and program planning and direction. In recent years the IFCC is playing an increasingly pro-active role.
- The four Interior bureaus, plus the Forest Service, the state foresters, and FEMA comprise the National Wildfire Coordinating Group, which establishes broad interagency direction and policy, particularly with regard to common standards for training and qualifications, equipment, and operations.
- Command and control of individual wildfires is a field office (park, district, refuge, agency) responsibility
- The National Interagency Fire Center (NIFC) in Boise, Idaho is a BLM-hosted facility which serves two principal functions:

- houses offices for Interior's national-level fire program managers and their staffs, plus staff from the Forest Service fire program;
- houses offices for the Office of Aircraft Services and the National Weather Service (Boise station);
- provides support for interagency activities and operations, including the National Interagency Coordination Center (NICC) which serves as the national-level coordination point for firefighting resources and intelligence.

Program Scope

Department of the Interior Totals
 Ten-Year Averages, 1984-1993

(Some totals may not add due to rounding)

Fire Occurrence

	<u># Fires</u>	<u># Acres</u>
Wildfires	6,904	1,678,966
Prescribed Fires - Management	1,414	269,709
Prescribed Fires - Natural	109	21,506

Distribution of Wildfires by Size

	<u># Fires</u>	<u>% of Total</u>	<u># Acres</u>	<u>% of Total</u>
Less Than 10 Acres	5,466	81%	5,635	<1%
10 to 100 Acres	768	11%	23,717	2%
Greater Than 100 Acres	494	7%	1,394,061	98%

Distribution of Wildfires by Cause

	<u># Fires</u>	<u>% of Total</u>	<u># Acres</u>	<u>% of Total</u>
Lightning	2,620	39%	1,000,761	73%
Incendiary	768	11%	51,086	5%
Debris Burning	841	12%	32,199	3%
Equipment Use	200	3%	35,274	3%
Other	2,309	34%	188,794	15%

Distribution of Wildfires by Cover Type

[No NPS data available]

	<u># Acres</u>	<u>% of Total</u>
Commercial Forest Lands	44,494	5%
Non-Commercial Forest Lands	690,283	44%
Non-Forested Lands	512,062	50%

Bureau of Land Management

Fire Occurrence (Avg. 1984 - 1993)

	<u>Fires</u>	<u>Acres</u>
Wildfires	2,365	876,587
Prescribed Fires - Management.....	586	68,339
Prescribed Fires - Natural	0	0

Distribution of Wildfires by Size (Avg. 1984 - 1993)

	<u>Fires</u>		<u>Acres</u>	
Less Than 10 Acres	1,829	77%	1,359	0%
10 to 100 Acres	252	11%	7,957	1%
Greater Than 100 Acres	284	12%	654,398	99%

Distribution of Wildfires by Cause (Avg. 1984 - 1993)

	<u>Fires</u>		<u>Acres</u>	
Lightning	1,584	67%	444,071	76%
Incendiary	116	5%	23,580	5%
Debris Burning.....	85	4%	9,900	2%
Equipment Use	84	4%	20,340	5%
Other	496	21%	50,832	12%

Distribution of Wildfires by Cover Type (Avg. 1984 - 1993)

	<u>Acres</u>	
Commercial Forest Lands	21,952	5%
Non-Commercial Forest Lands	258,191	36%
Non-Forested Lands	383,700	59%

Fish and Wildlife Service

Fire Occurrence (Avg. 1984 - 1993)

	<u>Fires</u>	<u>Acres</u>
Wildfires	385	466,859
Prescribed Fires - Management	630	141,867
Prescribed Fires - Natural	0	0

Distribution of Wildfires by Size (Avg. 1984 - 1993)

	<u>Fires</u>		<u>Acres</u>	
Less Than 10 Acres	230	60%	365	0%
10 to 100 Acres	83	22%	2,768	1%
Greater Than 100 Acres	72	19%	463,726	99%

Distribution of Wildfires by Cause (Avg. 1984 - 1993)

	<u>Fires</u>		<u>Acres</u>	
Lightning	145	38%	423,508	78%
Incendiary	60	15%	7,127	5%
Debris Burning	31	8%	2,035	1%
Equipment Use	15	4%	6,967	1%
Other	134	35%	27,221	15%

Distribution of Wildfires by Cover Type (Avg. 1984 - 1993)

	<u>Acres</u>	
Commercial Forest Lands	5,028	2%
Non-Commercial Forest Lands	396,640	59%
Non-Forested Lands	65,191	39%

National Park Service

Fire Occurrence (Avg. 1984 - 1993)

	<u>Fires</u>	<u>Acres</u>
Wildfires	818	219,439
Prescribed Fires - Management	144	45,113
Prescribed Fires - Natural	107	21,417

Distribution of Wildfires by Size (Avg. 1984 - 1993)

	<u>Fires</u>		<u>Acres</u>	
Less Than 10 Acres	625	85%	458	0%
10 to 100 Acres	65	9%	1,940	1%
Greater Than 100 Acres	47	6%	174,092	99%

Distribution of Wildfires by Cause (Avg. 1984 - 1993)

	<u>Fires</u>		<u>Acres</u>	
Lightning	268	36%	98,799	54%
Incendiary	84	11%	5,845	10%
Debris Burning	32	4%	980	3%
Equipment Use	19	3%	1,472	1%
Other	335	46%	69,085	32%

Distribution of Wildfires by Cover Type (Avg. 1984 - 1993)

	<u>Acres</u>
Commercial Forest Lands	N/A
Non-Commercial Forest Lands	N/A
Non-Forested Lands	N/A

Bureau of Indian Affairs

Fire Occurrence (Avg. 1984 - 1993)

	<u>Fires</u>	<u>Acres</u>
Wildfires	3,337	116,081
Prescribed Fires - Management.....	129	31,752
Prescribed Fires - Natural	2	99

Distribution of Wildfires by Size (Avg. 1984 - 1993)

	<u>Fires</u>		<u>Acres</u>	
Less Than 10 Acres.....	2,782	86%	3,453	3%
10 to 100 Acres	368	11%	11,053	9%
Greater Than 100 Acres	92	3%	101,846	88%

Distribution of Wildfires by Cause (Avg. 1984 - 1993)

	<u>Fires</u>		<u>Acres</u>	
Lightning	624	21%	34,384	25%
Incendiary.....	508	15%	14,534	16%
Debris Burning.....	693	21%	19,285	18%
Equipment Use	82	3%	6,495	5%
Other	1,345	41%	41,655	36%

Distribution of Wildfires by Cover Type (Avg. 1984 - 1993)

	<u>Acres</u>	
Commercial Forest Lands	17,514	15%
Non-Commercial Forest Lands	35,453	29%
Non-Forested Lands	63,171	56%

U.S. Forest Service

NOTE: Ten-Year Averages, 1983-1992

	<u># Fires</u>	<u># Acres</u>
Wildfires	11,228	535,751
Prescribed Fires - Management	N/A	N/A
Prescribed Fires - Natural	N/A	305,550

Distribution of Wildfires by Size

	<u># Fires</u>	<u>% of Total</u>	<u># Acres</u>	<u>% of Total</u>
Less Than 10 Acres	21,608	90%	N/A	N/A
10 to 100 Acres	1,240	7%	N/A	N/A
Greater Than 100 Acres	462	3%	N/A	N/A

Distribution of Wildfires by Cause (Avg. 1983 - 1992)

	<u>Fires</u>		<u>Acres</u>	
Lightning	13,754	55%	854,869	53%
Incendiary	2,324	13%	105,326	14%
Debris Burning	864	4%	10,815	6%
Equipment Use	662	4%	23,807	6%
Other	5,706	25%	175,378	21%

Distribution of Wildfires by Cover Type (Avg. 1983 - 1992)

	<u>Acres</u>
Commercial Forest Lands	N/A
Non-Commercial Forest Lands	N/A
Non-Forested Lands	N/A

Coordination Mechanisms

Interior Fire Coordination Committee (IFCC)

- Consists of the four Interior fire program directors (Dunton, BLM; Erskine, NPS; Erb, FWS; Wallace, BIA)
- Provides program and budget coordination for the Interior wildland program
- Meets 4-5 times each year
- Currently overseeing major efforts in strategic planning, shared computer applications, public/employee education initiative, organizational streamlining, and reduction of internal management regulations

Departmental Fire Program Coordinator

- Provides day-to-day coordination, liaison, and representation for the Interior program, both within Interior and outside of Interior

National Wildfire Coordinating Group (NWCG)

- Membership includes four Interior bureaus (Dunton, Hurd, Erb, Wallace), Forest Service (Lavin), Forest Service Research (Bill Sommers), National Association of State Foresters (2 representatives), and FEMA (Fire Administration)
- Develops and oversees operational standards and procedures that are adopted by each agency through policy processes in each
- Provides a forum for interagency coordination
- Meets 3 times each year
- Has chartered 7 interagency working teams and 3 advisory groups that develop recommendations on operational policies and procedures to the NWCG. A working team typically consists of 8 people representing all member agencies. In addition, NWCG oversees one operational unit, the Publications Management System.

Wildfire Suppression Overview

Command and Control

- Regardless of size, command and control for wildfire incidents always remains with the field manager (park superintendent, BLM district manager, FS forest supervisor, etc.)
- Any special incident management teams brought in to run the fire suppression organization work for the local manager through a limited delegation of authority for the incident.

Hierarchy of Response

- Initial response ("initial attack") is the responsibility of the local land management organization, although there are a number of agreements and arrangements to accomplish initial attack on an interagency basis.

If the initial attack forces cannot contain the fire (usually within the first 24 - 48 hours), the fire is declared "escaped" and an Escaped Fire Situation Analysis (EFSA) is conducted to determine the appropriate suppression response based on the values at risk and the estimated costs. Suppression options available are to confine (least aggressive), contain, or control (most aggressive). If additional resources are required to take the appropriate suppression action, resource orders are placed.

- The first call for additional resources (equipment, crews, supplies, aircraft) goes to a local dispatch center (often interagency) which covers an area ranging from a few hundred thousand acres to a few million acres (roughly 1/4 to 1/2 a western state); resources are ordered from the closest available source within the area, regardless of agency.
- If resources at the local dispatch level are inadequate, the order is passed on to the geographic area level, where the resource orders are filled in the same manner.
- Orders that cannot be filled at the geographic area level are referred to the National Interagency Coordination Center (NICC), located at the National Interagency Fire Center in Boise, Idaho. NICC can fill resource orders from anywhere in the country (including Alaska) and, in extraordinary circumstances, can obtain additional support from the military and from Canada under agreements with those organizations.

Guiding Principles

- Common standards for equipment, training, and qualifications
- Closest available forces - the closest available forces are used, regardless of agency ownership

- Total mobility - all resources can be mobilized to go anywhere
- Cost minimization - use tactics and strategies commensurate with the values at risk
- No Federal cross-billing - the five Federal agencies do not cross-bill for suppression costs on the theory that all funds come from the Federal treasury and that cross-billing is very costly

Setting Priorities

Although command and control remains at the incident level, responsibility for making allocations of scarce resources occurs at the various geographic levels described above. At each level a Multi-Agency Coordinating Group (MAC Group) comprised of representatives from each of the involved Federal and non-Federal agencies reviews the conditions in their area and makes decisions on priorities if resources become scarce. A national-level MAC Group operates at the National Interagency Coordination Center in Boise.

Preparedness Levels

Preparedness Levels are established by the Fire Directors at NIFC to identify the level and severity of fire activity nationally, to identify actions needed to maintain an appropriate level of readiness, and to modify area activities to meet national needs.

The four Preparedness Levels are:

- I: No large fire activity nationally.
- II: One geographic area experiencing high fire danger.
- III: Two or more geographic areas experiencing incidents requiring a major commitment of National Resources.
- IV: Two or more geographic areas experiencing incidents requiring Type I Incident Management Teams; competition exists for resources among geographic areas.
- V: Several geographic areas are experiencing major incidents that have the potential to all Agency fire resources.

Federal Firefighting Resources Available

The table below portrays the total numbers and types of federal fire suppression forces available for 1994 season:

<u>Type of Resource</u>	<u>1994 Resources</u>
Smokeyjumpers	387
Type I crews	66
Type II crews	431
Airtankers	41
Helicopters	105*
Engines	1,048**
Overhead personnel	15,000
Lead planes	27

*Additional resources are available on a call-when-needed (CWN) basis.

**This number represents DOI attributed resources only.

=====

DOI Firefighting Personnel (by type of appointment):

Permanent full-time - 842
 Career seasonal - 605
 Temporary seasonal - 2,031

The figures shown above for Type II crews represent the total number of crews that the various geographic areas are required to sponsor each year. These crews are generally made up of permanent agency personnel (such as USFS and DOI regular crews) and of BIA tribal members and Alaskan natives hired as ADs (emergency hires). They can be augmented by crews comprised of migrant workers, additional Native Americans, etc., for an additional 150-250 Type II crews available. Total crew availability within a given state may also be further augmented by the use of state inmate crews.

When added together, the total number of personnel resources available for firefighting is somewhere in the neighborhood of 25,000 to 30,000. Only when personnel commitments reach this number is it necessary to call in military personnel resources.

Fire & Aviation Management

Fact Sheet

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Fire Suppression Costs

1. What is the average hourly wage for a firefighter?

At the AD 1-5 rate, wages range from \$7.72 - \$11.28 per hour.

2. What is the average contract rate for a helicopter?

There are so many variables ranging from size of helicopter to the type of contract it is on.

The most widely used helicopter is a medium size on a "call-when-needed" contract; meaning that we pay them for the time it is used. Second in line is the medium sized helicopter on an "exclusive use" contract.

Call When Needed Rates

Exclusive Use

\$3,000/day @ 10 hours/day

\$2,000 - \$2,500/day @ 9 hours/day

\$600 - \$900/hour for flight rates for both types of contracts

3. What is the average contract rate for an air tanker?

Again, there are many variables to these figures because each air tanker is negotiated separately. All air tankers are on exclusive use contracts.

The daily rates for the average air tanker is between \$1,500 - \$2,800 for nine hours standby. We hold them on stand-by because they are used for initial attack purposes and need to be mobilized at a moment's notice.

The daily rate will vary according to the number of days it is on contract. The average number of days for a contract is between 90 and 160 days. The more days on contract, the lower the daily rate.

In addition to the daily rate we also pay a flight rate when the aircraft is mobilized. The rate is figured according to the price of fuel per gallon. With a \$2 per gallon rate, the flight rate ranges between \$1,211/hour and \$3,070/hour.

4. What is the average cost to transport firefighters by aircraft?

Large Transport Contract Jets

= \$ 86.50 - \$118.01 per passenger

Large Transport Charter

= \$208.66 per passenger

Light Fixed Wing

= \$407.00 per passenger

5. What is the hourly-average wage of a smokejumper?

There are many levels in the BLM Smokejumper program that determine the pay scale for the employee. The average wages range between \$9.10 and \$16.66 per hour.

Fire & Aviation Management

Fact Sheet

United States Department of Agriculture • Forest Service

TYPE I and TYPE II TEAMS

The primary difference between a Type I and a Type II Incident Management Team is a matter of size and complexity. The factors that affect the decision to go to a Type I operation and thus, a Type I Incident Management Team, are extremely variable and depend on the location, threat to life and property, political, organizational, values-at-risk, fuel types, jurisdictional, topography, and policy.

A Type I Incident Management Team, generally speaking is composed of the highest level of experience and training needed to manage an emergency or disaster. Team composition is interagency in nature. There are as many as 18 Type I Interagency Management Teams available nationwide, 12 months a year. Not only do these Incident Management Teams respond to fires but also to any natural disasters. Examples include the 1994 Los Angeles Earthquake, 1992 Hurricane Andrew in Florida, the Mid-Western Floods of 1993, and Typhoon Incidents in Kauai, Hawaii.

A Type II Incident Management Team has several of the characteristics of a Type I Incident Management Team. However, Type II Teams are generally organized to respond to emergencies or disasters in their local areas (counties, states, etc.). The level of experience and training is extensive but may not be as high as Type I Teams. Type II Teams may be composed of single agency or interagency personnel. The number of Type II Teams in any one local area may vary with need.

Type I and Type II Crews

Type I Crews are primary firefighting forces financed from fire management funds. There are a minimum of 66 Type I Interagency Hotshot Crews located throughout the country during fire season. The crew normally consists of 20 people. To be designated a Type I crew, more than 90 percent of the crew members have a minimum of one season fire experience. Crew members receive a minimum of 80 hours suppression training annually. Type I crews are specifically trained to work together as a unit. The crews are capable of being dispatched within 2 hours. Air or ground transportation is assured for each crew. Examples of these crews are: Smokejumpers and Interagency Hotshots.

Type II Crews are organized as the fire situation dictates. There are 431 crews available nationwide during fire season. The crew normally consists of 20 people. Generally speaking, Type II crew members have jobs outside of firefighting. They are recruited prior to the fire season and given basic firefighting training. Examples of these crews are Native Americans, migrant workers, regular agency personnel, and prison crews. Travel and departure arrangements vary with the fire location and assignment.

Fire & Aviation Management

Fact Sheet

United States Department of Agriculture • Forest Service

PREPAREDNESS LEVELS

Preparedness levels are dictated by burning conditions, fire activity, and resource availability. Resource availability is the area of most concern.

Why are they established?

- A. To identify the level of wildland fire activity, severity, and resource commitment nationally.
- B. To identify actions to be taken by the National Interagency Fire Center (NIFC) to ensure an appropriate level of preparedness for the existing and potential situation.
- C. To modify or curtail Geographic Area Fire Management activities when essential to ensure national preparedness or in response to the national situation.

- Level I:**
- No large fire activity nationally.
 - Most geographic areas have low to moderate fire danger.
 - Little or no commitment of National Resources.

- Level II:**
- One geographic area experiencing high fire danger.
 - Numerous Class A, B, & C fires occurring or a potential exists for escapes to larger (project) fires.
 - Minimal mobilization of resources from other geographic areas occurring.
 - The potential exists for mobilizing additional resources from other geographic areas.

- Level III:**
- Two or more geographic areas experiencing incidents requiring a major commitment of National Resources.
 - High number of fires becoming Class D and larger.
 - Additional resources are being ordered and mobilized through the National Interagency Coordination Center (NICC).
 - Type I Teams are committed in two or more areas or 300 crews are committed nationally.

- Level IV:**
- Two or more geographic areas experiencing incidents requiring Type I Teams.
 - Competition exists for resources between geographic areas.
 - 450 crews or nine Type I Teams committed nationally.

- Level V:**
- Several geographic areas are experiencing major incidents which have the potential to exhaust all Agency Fire Resources.
 - 625 crews committed nationally.

<u>FIRE SIZE CLASS</u>	<u>ACRES</u>
A - B	.25 - 9
C	10 - 99
D	100 - 299
E	300 - 999
F	1,000 - 4,999
G	5,000+



Military Costs

The military costs are different between the National Guard/Army Reserve and Active Military.

The National Guard/Army Reserve are agreements with the Federal Wildland Firefighting Agencies and State Wildland Fire Fighting Agency. These units are activated with concurrence of the Governor.

The Federal or State Agency pays the full salary and all support costs of the National Guard or Army reserve.

The Federal or State Agency pay the total cost of fuel, maintenance and support of all National Guard/Army Reserve aircraft.

The bill is sent to the federal or state agency requesting the unit.

The Active Military has one National Agreement with the Federal Wildland Firefighting agencies. This agreement is activated through the National Interagency Fire Center to the Sixth Army Headquarters.

The requesting Federal Wildland Firefighting Agency pays only those costs the active Military incurs if they were not mobilized to fight fire.

The bill is sent to National Interagency Fire Center and the requesting agency pays the military.

As a rough estimate the Federal Wildland Firefighting agency is estimated to pay the active military between \$100.00 and \$200.00 per day. This pays for food, shelter, protective equipment, tools and fuel for military vehicles.

INTERAGENCY
MULTI-AGENCY COORDINATION
(MAC)

Purpose of MAC Group

MAC Groups have three basic missions:

1. Prioritize fires within their area of responsibility.
2. Prioritize which fires will get resources if insufficient resources are available.
3. Provide information on current fire situation.

MAC Group Levels

There can be several levels of MAC operations depending on the number and complexity of wildfires:

National Level at NIFC in Boise

- Prioritize the wildfires from those sent in from the geographic areas.
- Prioritize resources to be sent to geographic area if insufficient to meet outstanding fire orders.

Geographic Areas

- All areas have a predetermined membership for their geographic area, but add additional members as needed.
- Prioritize the fires within the geographic area.
- Prioritize the resources to be sent to fires within the geographic area if insufficient.

Local Area

- Due to a significant number of fires, a local interagency group may form to prioritize wildfires and resources. These groups may be predetermined or formed from interested parties. These MAC groups do exactly what the national and geographic areas accomplish.

Each MAC Group responds from the local area MAC to the geographic area MAC to the national MAC. Each MAC sends their priority for going wildfires within their area as well as priority of insufficient resources. The next level MAC fills insufficient needs. Any not filled are moved to the next higher level MAC group.

Priority Setting

The setting of priorities for each wildfire is developed based on a preagreed criteria. Usually this priority is as follows:

Life and Property
Fire Fighter Safety
Natural Resource Values

GEOGRAPHIC AREA COORDINATION CENTERS



Department of Interior
Incident Information Coordination Center

MISSION

The Department of Interior Incident Information Coordination Center (IICC) mission is to provide information about significant incidents on federal lands under DOI jurisdiction or support from the DOI to other agencies with a significant event, such as current wildfire situations, other natural disasters, or hazardous spills.

In addition, the Center coordinates external affairs issues and strategies regarding significant events, serves as a focal point for the resolution of DOI issues and policy questions, and coordinates efforts with other federal agencies, primarily the USDA Forest Service and the Federal Emergency Management Agency (FEMA).

CUSTOMERS

Information gathered by the IICC is disseminated to a variety of audiences, including senior Departmental and Bureau officials, offices and functions within DOI, such as Public Affairs, Congressional Affairs, Law Enforcement, external offices, such as News Media, Congressional Offices, Office of Management and Budget, and, at times, the White House staff.

ROLE

The Interior Incident Coordination Center gathers and summarizes information from a variety of sources. This information is sent out on a daily or twice daily basis depending on the incident. Special requests are accomplished as requested from any of the customers.

The Center also provides DOI public display boards listing incident information and conditions. A library of media coverage is available. In addition, during fire emergencies a library of fire program and fire season information is maintained.

STAFFING AND ORGANIZATION

The IICC works directly for the Office of Hazard and Fire Programs Coordination within the Department of Interior.

During critical incidents, staffing is supplemented by technical specialists from different interior agencies detailed to the IICC. These technical specialists are able to provide current technical and credible information regarding the incidents occurring.

CONTACTS

The IICC is headquartered in Room 5141 at the Main Interior Building. During critical incidents the center is staffed seven days a week. The phone number is 202-208-3986.

U.S. DEPARTMENT OF INTERIOR
INCIDENT INFORMATION COORDINATION CENTER

HISTORIC USE OF U.S. MILITARY FORCES IN WILDLAND FIRE SUPPRESSION
ACTIVITIES WITHIN THE UNITED STATES:

- 1886 - US ARMY INFANTRY AND CAVALRY UNITS; UTILIZED ON SEVERAL
FOREST FIRES IN YELLOWSTONE NATIONAL PARK, MT.
- 1941 - US ARMY INFANTRY AND PARATROOPERS; WORLD WAR II; UTILIZED TO
1944 PROTECT WESTERN TIMBER RESOURCES FROM JAPANESE FIRE BOMBING
ACTIVITIES OFF THE PACIFIC COAST AS WELL AS SUPPRESSING
OTHER TYPES OF WILDLAND FIRES THROUGHOUT THE WESTERN UNITED
STATES DURING WWII.
- 1982 - US MARINE CORPS; UTILIZED ON WILDLAND FIRES IN NORTH
CAROLINA.
- 1986 - US ARMY; UTILIZED ON SEVERAL WILDLAND FIRES IN WESTERN
UNITED STATES; EASTERN OREGON, NORTHERN IDAHO.
- 1987 - US ARMY; UTILIZED ON SEVERAL WILDLAND FIRES IN OREGON AND
NORTHERN CALIFORNIA.
- 1988 - US ARMY; HEAVY UTILIZATION OF MILITARY FORCES ON LARGE FIRES
IN YELLOWSTONE NATIONAL PARK, WESTERN WYOMING, SOUTHWESTERN
MONTANA. SEVERAL US ARMY BATTALIONS MOBILIZED AND DEPLOYED
ON FIRE ASSIGNMENTS LASTING UP TO 30 DAYS IN DURATION.
- 1990 - US ARMY; US AIR FORCE (MILITARY AIRLIFT COMMAND);
UTILIZED ON 2 MAJOR WILDLAND FIRES IN NORTHERN CALIFORNIA.
FOUR US ARMY BATTALIONS MOBILIZED FOR FIRE ASSIGNMENTS.
- 1994 - US ARMY; US MARINE CORPS; DEPLOYED TO WILDLAND FIRES IN
CENTRAL WASHINGTON, SOUTHERN IDAHO AND WESTERN MONTANA.
TWO BATTALIONS OF MARINES (5th and 11th Marine Regiments)
AND TWO BATTALIONS OF US ARMY (1st Air Cavalry) PLUS AIR
SUPPORT ELEMENTS (214th & 4/227th) COMMITTED TO MAJOR FIRES.

**U.S. DEPARTMENT OF THE INTERIOR
INCIDENT INFORMATION COORDINATION CENTER**

*** USE OF U.S. MILITARY FORCES ON FEDERAL WILDLAND FIRES**

The use of U.S. Military forces on wildland fires throughout the United States has a history that goes back as far as the 1800's. As early as 1886, the U.S. Army was utilized in controlling several large forest fires burning in and around the Yellowstone Park area of Montana.

Since that time, the U.S. Military has been used periodically in a wildland fire suppression role, which also includes an active part of forest fire suppression duties throughout the United States during World War II.

Since 1986, the use of military forces in wildland fire suppression has become noticeably more frequent. Activation of U.S. Army and/or U.S. Marine forces to fight forest and range fires have occurred in 1986, 1987, 1988, 1989 and 1990. The 1988 fire season experienced a particularly significant mobilization of U.S. Army troops to fight fires, once again, in Yellowstone National Park and other surrounding National Forest land.

As the 1994 Fire Season continues in full swing, the U.S. Marine Corps and U.S. Army has once again been called upon to assist the federal land management agencies in suppressing several catastrophic wildland fires throughout the West.

A detailed list and status of current U.S. Military deployments is identified below (numerous local national guard/army reserve units have also been deployed, but are not listed below):

<u>FIRE</u>	<u>STATE</u>	<u>UNIT</u>	<u>HOME UNIT</u>	<u>RESOURCES</u>
TYEE COMPLEX	WA	5th BATTALION, 11th MARINE REGIMENT	CAMP PENDELTON, CA.	500 FIREFIGHTERS
TYEE COMPLEX	WA	1st BATTALION, 5th MARINE REGIMENT	CAMP PENDELTON, CA.	500 FIREFIGHTERS
HATCHERY COMPLEX	WA	214th AVIATION UNIT, 6th ARMY	FT. LEWIS, WA.	5 CH-47 HELICOPTERS
IDAHO CITY COMPLEX	ID	20th ENG. BATTALION 1st AIR CAVALRY	FT. HOOD, TX.	700 FIREFIGHTERS
NINEMILE COMPLEX	MT	3/82nd FIELD ARTILLERY BATTALION, 1st AIR CAVALRY	FT. HOOD, TX.	500 FIREFIGHTERS
IDAHO CITY/ NINEMILE COMPLEX	ID/ MT	4th BN, 227th AVA. 1st AIR CAVALRY	FT. HOOD, TX.	10 UH-60 BLACK HAWK HELICOPTERS

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INCIDENT MANAGEMENT SITUATION REPORT
 MONDAY, AUGUST 8, 1994 - 0530 MDT
 NATIONAL PREPAREDNESS LEVEL V

Current Situation: Increased fire activity occurred in California and the Great Basin. Cooler temperatures, cloud cover and precipitation has moderated fire activity in Washington. Resource mobilization through NICC moderated significantly.

Colonel Anthony Palermo USMC, is the Task Force Commander for the Marine contingent assigned to the Tyee, Copper Butte and Okanogan Complex/fires. Colonel William T. Maddox USA, is the Task Force Commander for the U.S. Army contingents assigned to the Idaho City and Ninemile Complexes.

Three Blackhawk helicopters from the 4th Battalion, 227 Aviation Regiment, 1st Cavalry Division, Fort Hood Texas are expected to arrive today to support the Idaho City Complex. One Blackhawk helicopter is expected to arrive tomorrow.

Northwest Area Large Fires:

HATCHERY COMPLEX, Wenatchee NF. A Type I Incident Management Team (Porter) and a State Team (Messenbrink) are committed. Five CH-47 helicopters from the 214th Aviation Unit, Fort Lewis, WA. are assigned. The complex is comprised of the ALPINE LAKES, HATCHERY, RAT CREEK and LOWER VALLEY fires. The level 1 evacuation alert has been lifted for Leavenworth.

OKANOGAN COMPLEX, Okanogan NF. A Type I Incident Management Team (Monahan) and a Type II Incident Management Team (Burdick) are committed. The complex is comprised of the POORMAN, THUNDER, WAR CREEK, BURNT SAW RAINBOW/BOULDER/ BUTTE, and MISC. ABC fires. The War Creek and Boulder Creek fires have combined into one and are slowly moving downhill towards the town of Stehekin, Wa. A taskforce of engines will be barged up Lake Chelan this morning.

METHOW COMPLEX, Okanogan NF. A Type I Incident Management Team (Harbour) is committed. The evacuation notice for Edelweiss subdivision has been lifted. Parts of the fire are still actively burning, and an inversion has made air operations difficult. Two fires within the complex remain unstaffed.

TYEE COMPLEX, Wenatchee NF. A Type I Incident Management Team (Wands) is committed. The 5th Battalion, 11th Marine Regiment (Lt. Col. Rick Lindsey, Commander) and the 1st Battalion, 5th Marine Regiment (Lt. Col. Dave Bonwit, Commander) are assigned. A Type I Incident Management Team (Richer) is now managing the Entiat Ridge side of the fire. Focus is on holding and strengthening lines, and burn out operations continue.

COPPER BUTTE, Colville NF. A Type I Incident Management Team (Eddy) is

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committed. Three CH-47 helicopters from the B/6-158 Aviation Regiment, USAR, Everett, WA are assigned to the Copper Butte fire and Okanogan Complex. A level 1 and 2 evacuation is still in effect.

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KLICKITAT COMPLEX, Yakima Agency, BIA. A Type I Incident Management Team (Meuchel) is committed. This complex is comprised of the McCREEDY, VEDLICK, HUCKLEBERRY and 12 small spot fires. A faller, with multiple injuries, was med-evaced from the fireline yesterday. Cloud cover, moderate temperatures, and high humidity aided in a successful burnout operation yesterday morning.

SNAKE RIVER COMPLEX, Wallowa-Whitman NF. A Type II Incident Management Team (Phenix) is committed. This complex is comprised of the THORN CREEK, RAPID RIVER, TRIANGLE MOUNTAIN, SADDLE CREEK, HAAS HOLLOW, and SWAMP CREEK fires.

BRIDGE CREEK, Ochoco NF. A Type II Incident Management Team (Duke) is committed. National Guard arrived yesterday to aid in the suppression efforts.

INDIAN ROCK, Malheur NF. A Type II Incident Management Team (Lindsey) is committed.

LAKEBEDS, Yakima Agency, BIA. A Type II Incident Management Team (Lukens) is committed. Mop-up activities continue and the demobilization of some overhead and equipment has started.

PALMER COMPLEX, Washington State. A Type II Incident Management Team (Templeton) is committed. The complex is comprised of the SIMILKAMEEM, ELLEMEHAM, TUNK MTN., GRANDVIEW and HOT LAKE fires.

INCIDENT NAME	UNIT	ST	SIZE	% CTN	EST CTN	TOTAL PERS	CRW	ENG	HELI	STRUCT LOST	ESTS LOSS	EST COST
HATCHERY CPX	WEF	WA	31,410	50	UNK	2,486	49	188	6	18	UNK	12.6M
OKANOGAN CPX	OKF	WA	16,045	15	8/8	1,195	34	16	11	0	UNK	4.7M
METHOW CPLX	OKF	WA	4,000	30	UNK	524	20	10	2	0	UNK	UNK
TYEE COMPLEX	WEF	WA	121,400	79	8/10	2,721	86	9	14	94	7.7M	20.8M
COPPER BUTTE	COF	WA	10,550	65	8/12	811	27	22	5	0	UNK	5M
KLICKITAT CPX	YAA	WA	5,000	80	8/09	1,248	36	51	3	0	50M	8.5M
SNAKE RVR CPX	WWF	OR	2,168	66	UNK	303	11	4	3	0	UNK	1.5M
BRIDGE CREEK	OCF	OR	280	63	UNK	494	11	5	1	0	20K	650K
INDIAN ROCKS	MAF	OR	1,260	80	8/9	564	19	13	0	0	615K	1.6M
LAKEBEDS	YAA	WA	6,600	90	8/8	831	29	35	2	0	6.8M	UNK
PALMER COMPLEX	WAS	WA	11,360	40	8/7	308	8	25	7	UNK	UNK	800K
SWAMP CREEK	VAD	OR	44,000	70	8/08	75	0	12	1	0	UNK	UNK
STARVATION CX	WWF	OR	675	100		468	18	0	0	0	UNK	UNK

VAD = Vale District BLM WWF = Wallowa-Whitman NF

Northern Rockies Area Large Fires:

EAST FORK CHAMBERLIN, Montana State. A Type II Incident Management Team (Forrester) is committed. The 3/82nd Field Artillery Battalion, 1st Cavalry Division (Lt. Co. Marcus Dudley) is assigned.

LIVERMORE, Blackfoot Agency, BIA. A Type II Incident Management Team (Danforth/Stires) is committed. Higher humidities and lower temperatures reduced fire activity.

TRAIL COMPLEX, Bitterroot NF. A Type II Incident Management Team (Wetzsteon) is committed. This complex consists of the TRAIL fire and the BORDER fire.

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SAM'S COMPLEX, Clearwater NF. This complex consists of the SAM, HIDDEN-FIX, and the MINNESAKA fires. These fires are burning in steep, rugged terrain. The Sam fire threatens high value private and state timberlands, and a research natural area. The Hidden-Fix fire started in a timber sale unit and threatens the Hidden-Fix campground. The Minnesaka fire threatens an outfitter's camp.

ST. JOE FIRES, Idaho Panhandle NF. A Type II Incident Management Team (Hart) is committed.

CK CREEK, Charles M. Russell NWR, FWS. The fire continued to spread rapidly, resulting in an increase of 7,100 acres.

FREEZEOUT, Clearwater NF. The fire experienced large acreage gains.

INCIDENT NAME	UNIT	ST	SIZE	%	EST CTN	TOTAL PERS	CRW	ENG	HELI	STRUC LOST	EST\$ LOSS	EST COST
CHAMBERLIN	MTS	MT	1,177	30	UNK	736	26	19	3	UNK	UNK	843K
LIVERMORE	BFA	MT	1,080	90	8/8	380	11	11	2	UNK	800K	604K
TRAIL COMPLEX	BRF	MT	371	35	UNK	326	11	6	4	UNK	UNK	556K
SAM'S COMPLEX	BRF	MT	155	UNK	UNK	229	11	UNK	1	UNK	UNK	42K
ST JOE FIRES	IPF	ID	UNK	UNK	UNK	288	16	4	UNK	UNK	UNK	448K
CK CREEK	CMR	MT	9,600	15	8/10	132	4	10	1	UNK	UNK	60K
SUPERIOR SPT	LNF	MT	243	100	8/7	587	21	10	1	UNK	580K	1:1M
PASS CREEK	IPF	ID	99	100		217	8	1	2	UNK	40K	347K
ABANDON POINT	LDS	ID	100	UNK	UNK	104	3	UNK	2	UNK	UNK	67K
BEAUVAIS CREEK	CRA	MT	*	*	*	*	*	*	*	UNK	UNK	*
FREEZEOUT	CWF	ID	300	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK	10K

CRA = Crow Agency BIA LNF = Lolo NF IDS = Idaho State

Eastern Great Basin Area Large Fires:

EDGAR, Wasatche-Cache NF. A Type II Incident Management Team (McAtee) is committed.

BLACKWELL COMPLEX, Payette NF. A Type I Incident Management Team (Birch) is committed. The complex is comprised of the BLACKWELL and 10 smaller fires.

EAST HARKER COMPLEX, Salt Lake City District, BLM. A Type II Incident Management Team (Fitzgerald) is committed. This complex is comprised of the EAST HARKER and ERICKSON KNOLL fires. The REILLY fire was added to the complex yesterday.

BLACK WILLOW, Fishlake NF. A Type I Incident Management Team (O'Bannon) is committed.

IDAHO CITY COMPLEX, Boise NF. A Type I Incident Management Team (Liebersbach) is committed. The 20th Engineer Battalion, 1st Calvary Division (Lt. Col. Bruce Porter, Commander) is committed. Five Blackhawk helicopters from the 4th Battalion, 22nd Aviation Regiment, 1st Calvary Division are assigned. The Complex consists of the BANNACK FIRE and numerous small fires. The BEAR RIVER is a new 1,000 acre fire that was added to the complex yesterday.

CORRAL CREEK, Payette NF. A Type I Incident Management Team (Johnson) is committed. This complex consists of the CORRAL CREEK and the WARM SPRINGS fires. The fire spread to the north and south, resulting in an increase of 5,075 acres.

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INCIDENT NAME	UNIT	ST	SIZE	% CTN	EST CTN	TOTAL PERS	CRW	ENG	HELI	STRUC LOST	ESTS LOSS	EST COST
EDGAR	WCF	UT	3,400	40	8/11	313	12	7	2	0	50K	2.1M
BLACKWELL	PAF	ID	6,000	5	8/18	821	20	25	5	0	UNK	1.7M
EAST BARKER	SLD	UT	14,000	51	8/10	285	9	7	0	0	UNK	1K
BLACK WILLOW	FFI	UT	4,000	10	UNK	160	4	5	1	0	UNK	UNK
IDABO CITY CX	BOF	ID	6,400	50	8/10	1,761	54	17	7	0	UNK	6.5M
CORRAL CREEK	PAF	ID	9,075	5	UNK	315	7	8	4	0	UNK	UNK
DRY CANYON 11	UIS	UT	9,600	100		82	4	0	0	0	UNK	396K
STRAIGHT CYN	DIF	UT	213	100		129	4	3	6	0	UNK	200K
ELEVATOR CYN	BUD	ID	31,395	95	UNK	166	4	11	2	0	235K	1.8M

BOD = Boise BLM

North Zone - California Large Fires:

TRAUNER, Nevada-Yuba-Placer Ranger Unit, California State. A California Department of Forestry Type I Team (Charlton) is committed. The community of Mough and Ready and dispersed rural residents in the path of the fire are being evacuated and alerted. Ten structures have been destroyed.

CRYSTAL, Tahoe NF. A Type I Incident Management Team (Dougherty) is committed. The USFS and Nevada Department of Forestry are managing the fire under Unified Command. Only a small segment of open line remains, but it is the steepest area with the greatest potential for problems.

DILLON COMPLEX, Klamath NF. A Type I Incident Management Team (Lee) is committed. This complex is comprised of the JACK/XX/CEDAR, KELSEY/WILLIS, HARRINGTON/DIVIDE and 16 other contained fires. Transition to a Type II Incident Management Team (Raley) and containment has been delayed due to increased fire activity.

INCIDENT NAME	UNIT	ST	SIZE	% CTN	EST CTN	TOTAL PERS	CRW	ENG	HELI	STRUC LOST	ESTS LOSS	EST COST
TRAUNER	CAS	CA	700	10	UNK	669	21	111	2	10	4K	UNK
CRYSTAL	TNF	CA	7,220	80	8/8	1,279	40	110	11	6	3M	3.5M
DILLON CMPLX	KNF	CA	17,672	90	8/11	556	13	15	6	0	39.7M	14.2M

South Zone California Large Fires:

KELSEY, Amador-El Dorado Ranger Unit, California State. Approximately 20 structures have been destroyed. No other information available.

INCIDENT NAME	UNIT	ST	SIZE	% CTN	EST CTN	TOTAL PERS	CRW	ENG	HELI	STRUC LOST	ESTS LOSS	EST COST
KELSEY	CAS	CA	800	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK
GRAPEVINE	CAS	CA	1,000	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK
CREEK	CAS	CA	*	*	*	*	*	*	*	*	*	*

CAS = California State

Western Great Basin Large Fires:

KERN, Ely District, BLM. Fire behavior moderated, but some spotting was still occurring.

WOODHILLS, Elko District, BLM. Crews made good progress towards containment.

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INCIDENT NAME	UNIT	ST	SIZE	% CTN	EST CTN	TOTAL PERS	CRW	ENG	HELI	STRUC LOST	EST\$ LOSS	EST COST
KERN	ELD	NV	1,200	33	8/10	166	7	6	3	0	UNK	UNK
WOODHILLS	EKD	NV	4,000	80	8/8	97	2	7	2	0	UNK	UNK

Southwest Area Large Fires:

BEE, Tonto NF. The fire is threatening the town of Gisela and homes along Mye Creek road.

HOOKER GAP, San Carlos Agency, BIA. The fire received light precipitation.

LOST COMPLEX, Coconino NF. A Type 11 Incident Management Team (Bedlion) is committed.

INCIDENT NAME	UNIT	ST	SIZE	% CTN	EST CTN	TOTAL PERS	CRW	ENG	HELI	STRUC LOST	EST\$ LOSS	EST COST
BOZWORTH	AZS	AZ	1,000	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK	UNK
BEE	TNF	AZ	1,000	40	8/8	37	0	11	0	0	UNK	UNK
HOOKER GAP	SCA	AZ	428	75	8/8	45	2	3	0	0	UNK	UNK
LOST COMPLEX	COF	AZ	2,005	17	8/12	333	11	7	4	0	UNK	UNK

Outlook: A RED FLAG WATCH has been posted for eastern Idaho and western Wyoming for dry thunderstorms. Strong high pressure extends from eastern Arizona north through the Rocky Mountain states. Low pressure off the Washington coast will slowly drift to the northeast. Most of the western states will be under a moist southerly flow resulting in widespread thunderstorms from the desert southwest to and southern Sierras through much of the Great Basin and Rocky Mountain states. Thunderstorms will be wet in the Southwest, southern Great Basin and Rocky Mountain Areas. Thunderstorms in eastern Idaho and western Wyoming will generally be dry. Western Idaho will remain dry. Cooler temperatures and scattered showers will move into Washington and western Oregon. Cooler temperatures and showers that are forecast should bring some relief to the large fires in Washington. Fire activity in the Great Basin and Northern Rockies is expected to continue and possibly increase with forecasted dry lightning.

FIRES: Yesterday

AREA	BIA	BLM	FWS	NPS	STATES	USFS	TOTAL
ALASKA	0	5	1		3		9
NORTHWEST	1	1		2	11	20	35
CA-NORTHERN						3	3
CA-SOUTHERN	2				52	8	62
NORTHERN				3	25	50	78
GB-EASTERN	1	7			2	13	23
GB-WESTERN		10					10
SOUTHWEST	5	2			2	39	48
ROCKY MTN		2			1	9	13
EASTERN							
SOUTHERN							
USA	9	27	1	5	96	142	280

ACRES BURNED: Yesterday

AREA	BIA	BLM	FWS	NPS	STATES	USFS	TOTAL
ALASKA	740	156	1,103		1,675		3,674
NORTHWEST	2	0		0	10	40	52
CA-NORTHERN						0	0
CA-SOUTHERN	0				1,290	12	1,302
NORTHERN				46	529	277	852
GB-EASTERN	200	103			10	4,262	4,575
GB-WESTERN		280					280
SOUTHWEST	7	5,756			260	1,053	7,076
ROCKY MTN		1,302			1	196	1,499
EASTERN							
SOUTHERN							
USA	949	7,597	1,103	46	3,775	5,840	19,310

RESOURCE STATUS: Committed Resources

RESOURCE	CREWS		ENGINES		HELICPTR		AIRTANKER		OVERHEAD	
	FED	NON	FED	NON	FED	NON	FED	NON	FED	NON
ALASKA										
NORTHWEST	#241	94	166	318	37	17	9		#1046	976
CA-NORTHERN	38	20	31	98	8		4	8	260	225
CA-SOUTHERN*										
NORTHERN	90	42	93	65	9				418	237
GB-EASTERN	#117	16	41	46	18	9	1		#650	146
GB-WESTERN	1	8	11	2	3	2	2		29	1
SOUTHWEST	12		26	2	5				74	2
ROCKY MTN	8		44		8		2			
EASTERN										
SOUTHERN										
USA	507	108	412	531	88	28	18	8	2,477	1,587

FED = FEDERAL AND FEDERAL CONTRACT RESOURCES

NON = NON FEDERAL RESOURCES

* No reports received.

#Includes military crews ## Includes military overhead

8/08 12:04 page 10

FIRES: Year to date

AREA	BIA	BLM	FWS	NPS	STATES	USFS	TOTAL
ALASKA	55	12	44	11	312	5	499
NORTHWEST	301	238	11	109	1,584	1,506	3,749
CA-NORTHERN	75	39	3	50		669	836
CA-SOUTHERN		94		24	2,242	516	2,876
NORTHERN	311	40		45	958	1,678	3,032
GB-EASTERN	54	541		15	241	785	1,642
GB-WESTERN		378			65	122	565
SOUTHWEST	1,313	350	17	134	1,518	2,177	5,509
ROCKY MTN	613	584		61	525	569	2,352
EASTERN	324			53	9,156	496	10,029
SOUTHERN	2		31	81	20,356	661	21,131
USA	3,048	2,342	106	583	38,195	9,184	52,220
5 YEAR AVERAGE							48,682

ACRES BURNED: Year to date

AREA	BIA	BLM	FWS	NPS	STATES	USFS	TOTAL
ALASKA	46,104	46,303	74,903	12,212	26,952	1	206,475
NORTHWEST	51,921	77,505	7,918	578	16,615	145,203	299,740
CA-NORTHERN	28	2,743	8,042	2,206		28,236	41,255
CA-SOUTHERN		21,636		5	38,166	49,913	109,720
NORTHERN	5,710	3,007		51	16,318	5,660	30,746
GB-EASTERN	853	205,010		38	62,249	12,405	280,555
GB-WESTERN		176,131			4,304	11,924	192,359
SOUTHWEST	31,179	63,802	7,683	23,942	138,779	135,399	400,784
ROCKY MTN	19,961	30,908		156	9,836	8,180	69,041
EASTERN	16,399			940	83,603	6,371	107,313
SOUTHERN	12		11,274	3,763	394,896	37,416	447,361
USA	172,167	627,045	109,820	43,891	791,718	440,708	2,185,349
5 YEAR AVERAGE							1,809,470

CANADA FIRES AND HECTARES

PROVINCES	YESTERDAY		YEAR TO DATE	
BRITISH COLUMBIA	111	252	2,790	21,513
YUKON TERRITORY	2	1,074	211	84,213
ALBERTA	6	2,522	654	28,092
NORTHWEST TERRITORY	4	20,567	556	1,380,633
SASKATCHEWAN	2	147	401	487,504
MANITOBA	0	0	428	425,185
ONTARIO	0	0	933	79,034
QUEBEC	0	0	400	115,888
NEWFOUNDLAND	0	13,998	104	110,321
NEW BRUNSWICK	1	0	221	104
NOVA SCOTIA	0	0	175	119
PRINCE EDWARD ISLAND	0	0	16	14
NATIONAL PARKS	1	3,994	108	40,662
TOTALS	127	42,554	6,997	2,773,282

----- NATIONAL INTERAGENCY COORDINATION CENTER -----

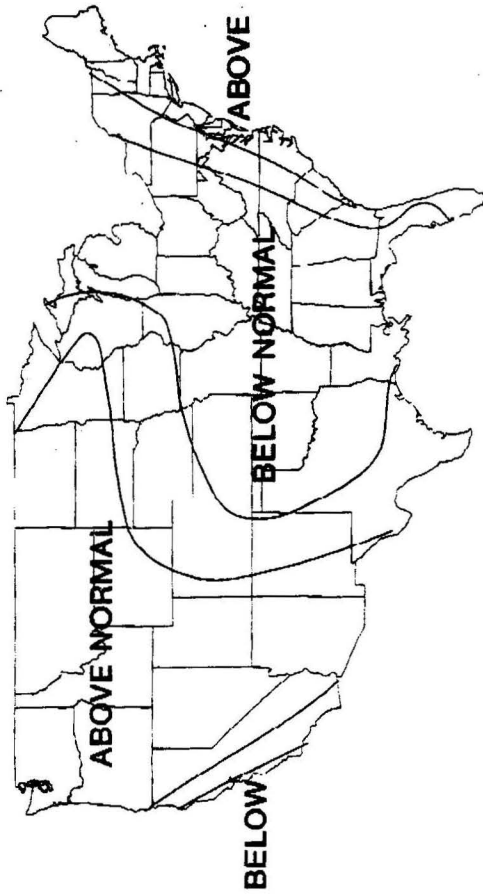
AUGUST 1994



WEATHER BRIEFING

**PRESENTED BY:
RICK OCHOA
STAFF METEOROLOGIST TO NIFC**

TEMPERATURE OUTLOOK - AUGUST 1994



**AUGUST 1994
WEATHER BRIEFING**

INTRODUCTION:

This briefing contains information pertaining to precipitation percent of normal for the water year beginning October 1, 1993 for the Western U.S. Palmer Drought Index comparative graphics are also included. The 30 and 90 day extended outlooks for August through October also presented. The material for this briefing is compiled from data gathered from the Soil Conservation Service, Climate Analysis Center and the Long Range Prediction Group of the National Weather Service.

PALMER DROUGHT INDEX:

The drought continues to worsen over the West. Extreme drought (PDI -4.0 or less) covers most of the region. The lowest PDI values are found in an area from the Pacific Northwest, across southern Idaho to western Colorado. PDI values as were down to -8.4 in some areas. Small areas of severe drought (PDI -3.0 to -3.9) were scattered over Texas, the Great Lakes region and the Northeast.

OUTLOOK JULY THROUGH SEPTEMBER:

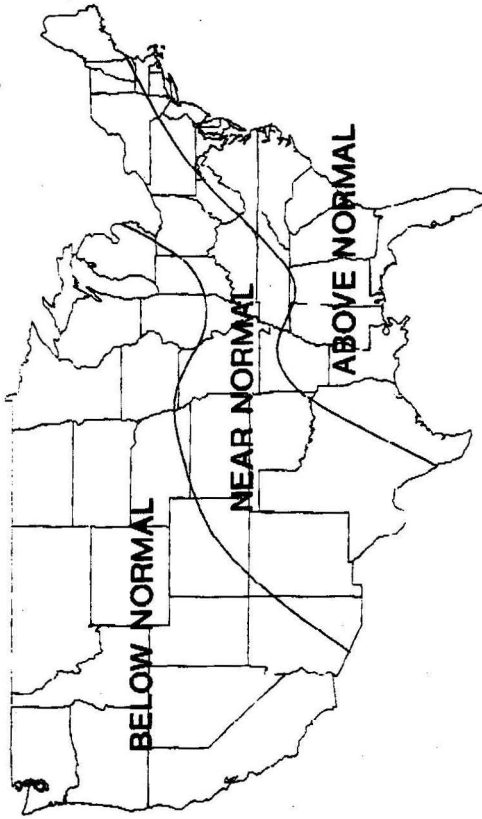
For August, a rather strong high pressure ridge is expected to continue over the West with a deep low pressure trough from the Great Lakes to the Southeast. Warmer and drier than normal weather is forecast for the West, Upper Plains and Great Lake states. The East Coast will also be hotter than normal with above average rainfall in the Southeast.

For August through October, the upper air pattern shifts a little west with the upper ridge over the Far West and the upper trough over the central states. The outlook for the period calls for warmer than normal conditions over the West and East, with cool weather over the middle part of the country. Precipitation should be near normal over much of the nation.

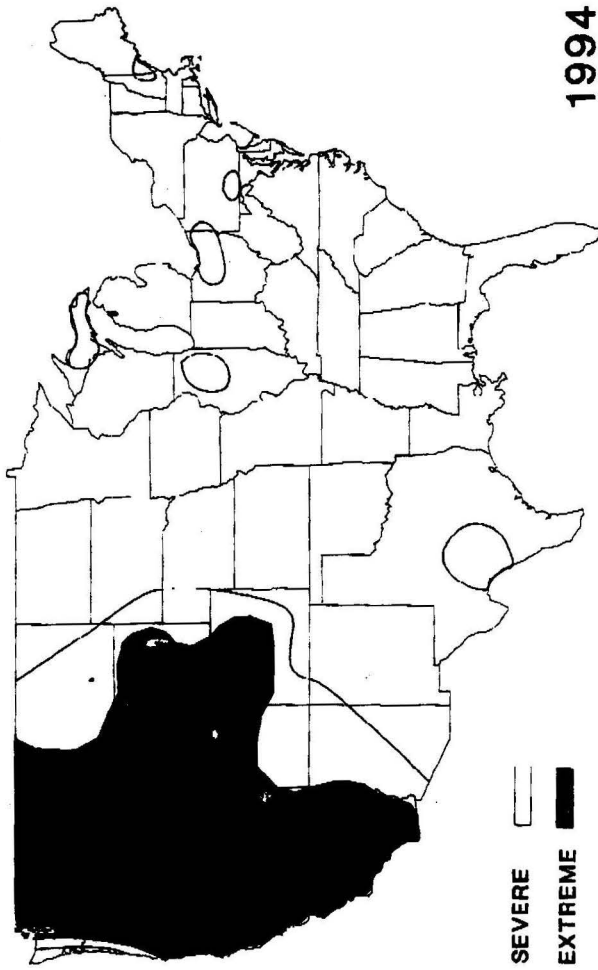
SUMMARY:

The extended range forecasts suggest a rather long and active fire season. The warm and dry pattern in the West seems locked in place for the rest of the summer. So far the southwest monsoon has been weaker than normal.

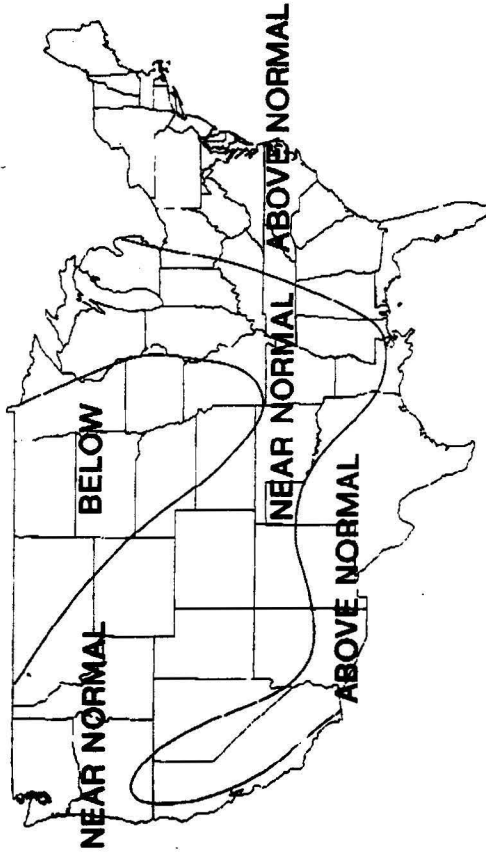
PRECIPITATION OUTLOOK - AUGUST 1994



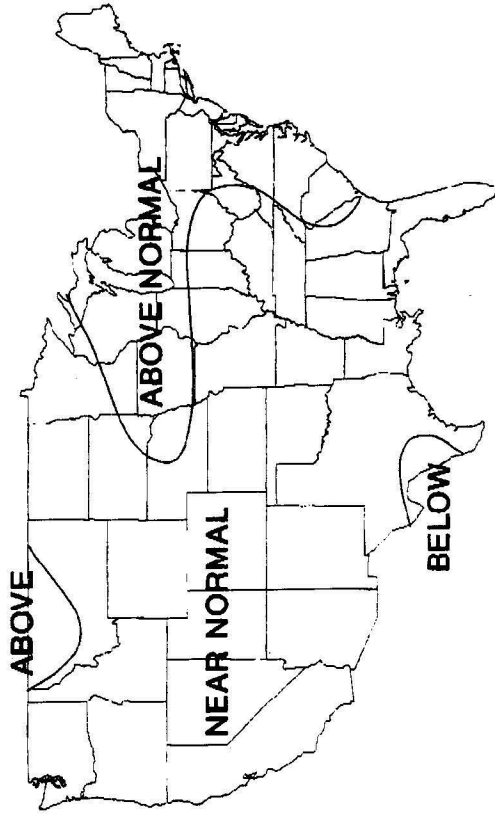
PALMER DROUGHT INDEX THROUGH JULY 30, 1994

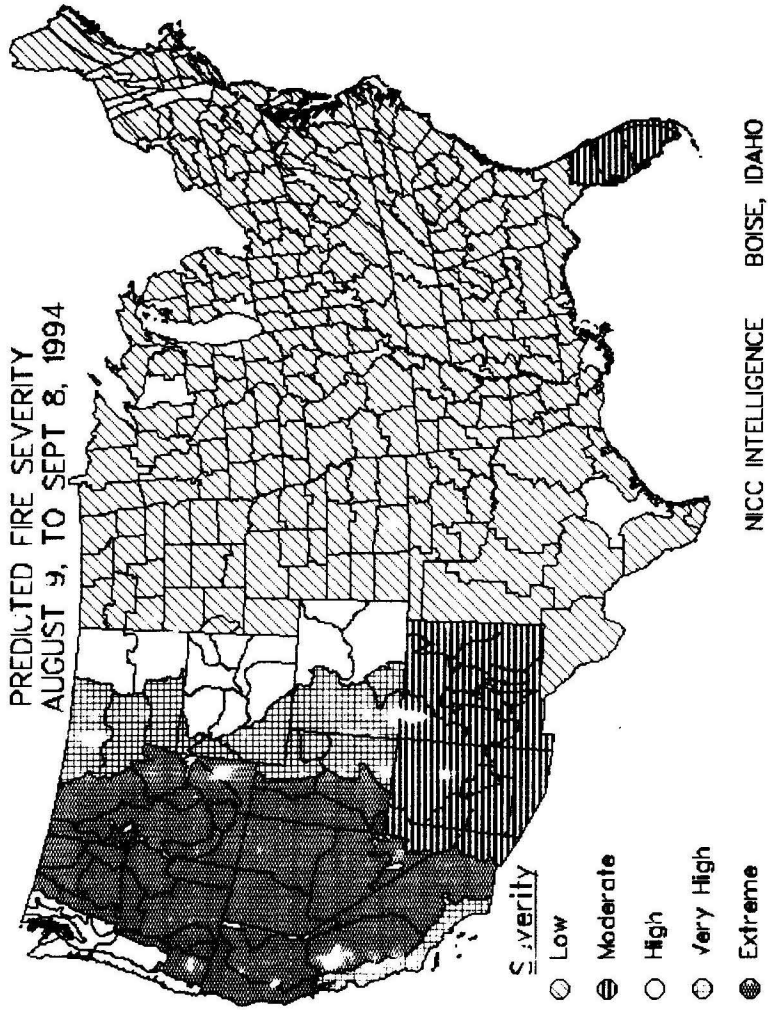


TEMPERATURE OUTLOOK AUGUST - OCTOBER 94



PRECIPITATION OUTLOOK AUGUST - OCTOBER 94







National Fire News

3833 S. Development Ave. • Boise, ID 83705-5354

Phone: (208) 387-5050

FAX: (208) 387-5386

1994 Report by the National Interagency Fire Center

August 7, 1994 – 2000 MDT

SUMMARY OF PROJECT FIRES AND FIRES SUPPRESSED WITH INITIAL ATTACK

Time Period	Suppressed Fires w/IA	Escaped Fires	Totals
July 1 – 20, 1994	4,842	183	5,025
July 21 – August 6, 1994	7,612	255	7,867
July 1 – August 6, 1994	12,454	438	12,892

GEOGRAPHIC AREA SUMMARY July 21 – August 6, 1994

Geographic Area	Suppressed Fires w/IA	Escaped Fires	Totals
Alaska	38	0	38
Northwest (WA, OR)	1,926	56	1,982
California, North Zone	339	5	348
California, South Zone	554	5	559
Northern Rockies (MT, ND, North ID)	1,800	19	1,819
Eastern Great Basin (UT, South ID)	800	29	829
Western Great Basin (NV)	232	17	249
Southwest (AZ, NM)	1,314	12	1,326
Rocky Mountain (CO, WY, NB, SD)	538	3	541
Eastern	107	0	107
(DE, IL, IN, IO, ME, MD, MA, MI, MN, MO, NH, NJ, NY, OH, PA, RI, VT, WV, WI)			
Southern	68	1	69
(AL, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA)			

**U.S. DEPARTMENT OF THE INTERIOR
INCIDENT INFORMATION COORDINATION CENTER**

*** USE OF U.S. MILITARY FORCES ON FEDERAL WILDLAND FIRES**

The use of U.S. Military forces on wildland fires throughout the United States has a history that goes back as far as the 1800's. As early as 1886, the U.S. Army was utilized in controlling several large forest fires burning in and around the Yellowstone Park area of Montana.

Since that time, the U.S. Military has been used periodically in a wildland fire suppression role, which also includes an active part of forest fire suppression duties throughout the United States during World War II.

Since 1986, the use of military forces in wildland fire suppression has become noticeably more frequent. Activation of U.S. Army and/or U.S. Marine forces to fight forest and range fires have occurred in 1986, 1987, 1988, 1989 and 1990. The 1988 fire season experienced a particularly significant mobilization of U.S. Army troops to fight fires, once again, in Yellowstone National Park and other surrounding National Forest land.

As the 1994 Fire Season continues in full swing, the U.S. Marine Corps and U.S. Army has once again been called upon to assist the federal land management agencies in suppressing several catastrophic wildland fires throughout the West.

A detailed list and status of current U.S. Military deployments is identified below (numerous local national guard/army reserve units have also been deployed, but are not listed below):

<u>FIRE</u>	<u>STATE</u>	<u>UNIT</u>	<u>HOME UNIT</u>	<u>RESOURCES</u>
TYEE COMPLEX	WA	5th BATTALION, 11th MARINE REGIMENT	CAMP PENDELTON, CA.	500 FIREFIGHTERS
TYEE COMPLEX	WA	1st BATTALION, 5th MARINE REGIMENT	CAMP PENDELTON, CA.	500 FIREFIGHTERS
HATCHERY COMPLEX	WA	214th AVIATION UNIT, 6th ARMY	FT. LEWIS, WA.	5 CH-47 HELICOPTERS
IDAHO CITY COMPLEX	ID	20th ENG. BATTALION 1st AIR CAVALRY	FT. HOOD, TX.	700 FIREFIGHTERS
NINEMILE COMPLEX	MT	3/82nd FIELD ARTILLERY BATTALION, 1st AIR CAVALRY	FT. HOOD, TX.	500 FIREFIGHTERS
IDAHO CITY/ NINEMILE COMPLEX	ID/ MT	4th BN, 227th AVA. 1st AIR CAVALRY	FT. HOOD, TX.	10 UH-60 BLACK HAWK HELICOPTERS

**U.S. DEPARTMENT OF INTERIOR
INCIDENT INFORMATION COORDINATION CENTER**

**HISTORIC USE OF U.S. MILITARY FORCES IN WILDLAND FIRE SUPPRESSION
ACTIVITIES WITHIN THE UNITED STATES:**

- 1886 - US ARMY INFANTRY AND CAVALRY UNITS; UTILIZED ON SEVERAL FOREST FIRES IN YELLOWSTONE NATIONAL PARK, MT.
- 1941 - US ARMY INFANTRY AND PARATROOPERS; WORLD WAR II; UTILIZED TO PROTECT WESTERN TIMBER RESOURCES FROM JAPANESE FIRE BOMBING ACTIVITIES OFF THE PACIFIC COAST AS WELL AS SUPPRESSING OTHER TYPES OF WILDLAND FIRES THROUGHOUT THE WESTERN UNITED STATES DURING WWII.
- 1944
- 1982 - US MARINE CORPS; UTILIZED ON WILDLAND FIRES IN NORTH CAROLINA.
- 1986 - US ARMY; UTILIZED ON SEVERAL WILDLAND FIRES IN WESTERN UNITED STATES; EASTERN OREGON, NORTHERN IDAHO.
- 1987 - US ARMY; UTILIZED ON SEVERAL WILDLAND FIRES IN OREGON AND NORTHERN CALIFORNIA.
- 1988 - US ARMY; HEAVY UTILIZATION OF MILITARY FORCES ON LARGE FIRES IN YELLOWSTONE NATIONAL PARK, WESTERN WYOMING, SOUTHWESTERN MONTANA. SEVERAL US ARMY BATTALIONS MOBILIZED AND DEPLOYED ON FIRE ASSIGNMENTS LASTING UP TO 30 DAYS IN DURATION.
- 1990 - US ARMY; US AIR FORCE (MILITARY AIRLIFT COMMAND); UTILIZED ON 2 MAJOR WILDLAND FIRES IN NORTHERN CALIFORNIA. FOUR US ARMY BATTALIONS MOBILIZED FOR FIRE ASSIGNMENTS.
- 1994 - US ARMY; US MARINE CORPS; DEPLOYED TO WILDLAND FIRES IN CENTRAL WASHINGTON, SOUTHERN IDAHO AND WESTERN MONTANA. TWO BATTALIONS OF MARINES (5th and 11th Marine Regiments) AND TWO BATTALIONS OF US ARMY (1st Air Cavalry) PLUS AIR SUPPORT ELEMENTS (214th & 4/227th) COMMITTED TO MAJOR FIRES.

Fire & Aviation Management

Fact Sheet

United States Department of Agriculture • Forest Service

August 8, 1994 0900 hours

In the past 24 hours wildfires have burned over **19,310** acres in the United States.

In the past 24 hours **280** new wildfires have been reported across the country.

There are currently **39** major fires in 8 western states which have consumed over **360,800** acres.

52,220 wildfires have burned **2,185,349** acres since the beginning of the year.

There are **24,480** firefighters committed nationwide including 3,570 Army, Marine Corps and National Guard personnel.

There are **772** fire engines committed nationwide.

There are **131** helicopters and **47** airtankers in operation nationwide.

The Tyee Fire Complex has burned **121,400** acres. It is 79% contained. Containment expected August 10.

The Tyee, Rat Creek, Round Mountain and Hatchery Complex destroyed 37 homes. About 2,700 structures were protected from direct firefighting action and 540 homes were saved from fire which blackened nearby ground.

Evacuation orders for areas affected by the Hatchery Complex have been downgraded to Level I (prepare for evacuation).

Level I alert for Wenatchee has been cancelled.

Firefighters from the USDA Forest Service; other federal, state, and local agencies; and the military are battling the blazes.

The National Interagency Fire Center is at Preparedness Level 5 - our highest level.

Two Marine battalions and 8 CH-47 helicopters at fires in Eastern Washington. One Army battalion and 5 Blackhawk helicopters in Idaho and another Army battalion in Montana.

National Guard crews are deployed in Washington.

FEMA declarations for Crystal Fire in California/Nevada and 2 fires in Utah for financial assistance.

RED FLAG Watch posted for eastern Idaho and western Wyoming for dry thunderstorms.

Fire & Aviation Management Morning Report

United States Department of Agriculture • Forest Service



August 8, 1994 0800 EDT

CONTACT: USFS -- WASHINGTON OFFICE FIRE STATUS DESK
David Olson or Bill Sweet 202/205-1450
FAX 202/205-1272

280 WILDFIRES WITHIN THE PAST 24 HOURS

19,310 ACRES BURNED WITHIN THE PAST 24 HOURS

NATIONAL OVERVIEW

Many western states continue to have severe burning conditions. Cooler temperatures and precipitation has moderated fire activity somewhat in the Pacific Northwest. Fire activity has increased in California and the Great Basin.

Military involvement includes 2 Marine Battalions and 8 CH-47 helicopters in Washington, 1 Army battalion and 5 Blackhawk helicopters in Idaho and 1 Army battalion in Montana.

High demands continue for fire fighting resources although military assistance has provided some relief.

CALIFORNIA

o Crystal (FS) Unified command in place with U.S. Forest Service and Nevada Department of Forestry near California/Nevada border at Verdi. This fire is 80% contained at 7,200 acres. Estimate containment today. This fire received a FEMA declaration for financial assistance.

o Trauner (CDF) north of Grass Valley has burned 700 acres and reportedly 10 structures. Evacuations in effect. Burning in thick brush. No estimate of containment.

o Kelsey (CDF) near Placerville has burned 800 acres and approximately 20 structures. No other information available.

o Dillon Complex (FS) has burned 17,672 acres in the Klamath National Forest. Transition to Type II Incident Management team. Estimated containment August 11.

OREGON

- o Swamp Creek Butte (BLM) at 44,000 acres is burning in heavy sage and juniper stands on the Vale District. Estimate containment today.
- o Snake River Complex (FS) at 2,168 acres. Some fires fully contained. Higher humidities and low winds aiding crews in the Wallowa-Whitman National Forest. Spike camp supplied by mule pack train. 66% contained.
- o Indian Rocks (FS) is burning in steep terrain and heavy stands of dead lodgepole pine on the Malheur National Forest. Burning in scenic area. 8,000 feet of fire hose deployed. 1,260 acres. Estimate containment August 9.

WASHINGTON

- o Tye Complex (FS) at 121,435 acres. 79% contained. Over 2,700 personnel are assigned to this fire. Focus is to hold and strengthen lines. Containment estimated for August 10.
 - o Okanagon Complex (FS) has consumed 16,045 acres. Estimate containment August 8. Protection equipment in place at Stehekin includes over 6 miles of fire hose to protect 200 homes. Task force of engines being barged to Stehekin.
 - o Hatchery Complex (FS) includes over 31,410 acres on the Wenatchee National Forest. Alpine Lakes Wilderness fires portions are in a confinement strategy. Ground heat sensing equipment being used to determine hot spots near fires edge. Level I evacuation alert for Wenatchee lifted.
 - o Lakebeds (BIA) has burned 6,600 acres. Containment expected today for this southern Washington fire.
 - o Klickitat Complex (BIA) acreage nearly 5,000 acres. Youth camp structure protection in place. Estimate containment tomorrow.
 - o Copper Butte Complex (FS) estimated at 10,550 acres in northeast Washington. 8 homes saved by West Oregon Interagency Foam team. Evacuations in effect. Other areas on alert. 3 CH-47 Army helicopters operating. 21 miles of line built, 15 to complete. Estimate containment August 12.
 - o Palmer Complex (WA State) comprised of 4 fires is at 11,360 acres. Portions of fire in Canada. Estimate containment today.
 - o Methow Complex (FS) has burned 3,800 acres in the Okanogan National Forest. Evacuation notice for subdivision lifted. Plantations and wolf denning areas affected.
- IDAHO
- o Idaho City Complex (FS) has burned 6,450 acres. No structures are threatened. Army battalion and 5 Blackhawk helicopters in place. 50% contained. Estimated containment is August 10.
 - o Blackwell Complex (FS) has burned 6,000 acres in heavy bug killed timber on the Payette National Forest. Control problems due to winds and steep rocky slopes. Structure protection engines in place. Estimate containment August 18.
 - o Corral Creek (FS) at 9,000 acres on Payette NF. No estimate of containment.

UTAH

- o Black Willow (FS) threatens residences and livestock. 4,000 acres on the Fishlake National Forest. No estimate of containment.
- o Dry Canyon II (UT State) involves 9,600 acres. Contained. This fire has received a FEMA declaration for suppression assistance funding.
- o Edgar (FS) has burned 3,400 acres within the Wasatch-Cache National Forest. FEMA declaration received for suppression assistance funding in Randolph. Estimate containment August 11.
- o East Harker Complex (BLM) has burned 14,000 acres on the Salt Lake City District. 3 mine out buildings destroyed. Estimate containment August 10.

MONTANA

- o East Fork Chamberlin (MT State) has burned 1,177 acres. Army battalion assigned to fire. Threats to range and wildlife cover.
- o Livermore (BIA) is at 1,080 acres burning within the Blackfeet Indian Reservation near Glacier National Park, primarily in timber. Estimated containment is today.
- o Ck Creek (FWS) has burned 9,600 acres in northeast Montana on the C.M. Russell National Wildlife Refuge. No threat to private land. Estimate containment August 10.

NEVADA

- o Kern (BLM) at 12000 acres is burning in heavy Pinon-Juniper. Threatens historic mining area and wildlife habitat on Ely District. Estimated containment is August 10.
- o Woodhills (BLM) has burned 4,000 acres in northeast Nevada. Containment expected today.

ARIZONA

- o Bee (FS) at 1,000 acres threatens town of Gisela near the Tonto National Forest. No estimate of containment.
- o Lost Complex (FS) has burned 2,005 acres. Estimate containment August 12.

FIRE STATUS AND COMPARISON

	<u>Year to Date</u>	<u>5 Year Average</u>
Number of Fires	52,220	48,682
Acres Burned	2,185,349	1,809,470

FIRE WEATHER AND OUTLOOK

RED FLAG Watch posted for eastern Idaho and western Wyoming for dry thunderstorms. Resources continue to be in strong demand and fire managers are concentrating on their effective use, particularly for initial attack needs.

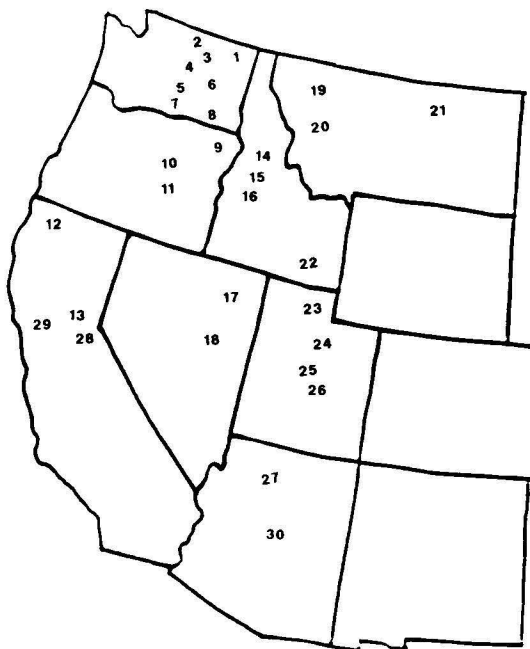


WESTERN FIRE STATUS

Fire Information Desk

202 205 1450

Large Fires



Ag.	Name	Acres
1.	NF Copper Butte	10550
2.	WS Palmer Cx	11360
3.	NF Okanogan Cx	16045
4.	NF Methow Cx	4000
5.	NF Hatchery Cx	34410
6.	NF Tyee Cx	121400
7.	BIA Klickitat Cx	5000
8.	BIA Lakebeds	6600
9.	NF Snake River Cx	2168
10.	NF Indian Rocks	1260
11.	BLM Swamp Cr.	44000
12.	NF Dillon Cx	17672
13.	NF Crystal	7000
14.	NF Blackwell Cx	6000
15.	NF Corral Cr	9075
16.	NF Idaho City	6400
17.	BLM Woodhills	4000
18.	BLM Kern	1200
19.	BIA Livermore	1080
20.	MTS Chamberlin	1177
21.	FWS Ck Creek	9600
22.	BLM Elevator Cyn	31395
23.	UTS Dry Canyon II	9600
24.	NF Edgar	3400
25.	BLM East Harker	14000
26.	NF Black Willow	4000
27.	NF Lost Cx.	2000
28.	CDF Trauner	700
29.	CDF Kelsey	800
30.	NF Bee	1000

August 8, 1994

0800 EDT

"FIRE SITUATION REPORT"

SEPT 29 1994

FIRES: Year to date

AREA	BIA	BLM	FWS	NPS	STATES	USFS	TOTAL
ALASKA	62	78	56	15	388	7	606
NORTHWEST	432	258	11	149	2,210	1,990	5,050
CA-NORTHERN	99	46	3	76		1,137	1,361
CA-SOUTHERN		160		39	6,212	798	7,209
NORTHERN	394	104		95	1,529	2,652	4,774
GB-EASTERN	90	843		39	513	1,480	2,965
GB-WESTERN		542		1	101	224	868
SOUTHWEST	1,586	412	17	250	1,664	2,802	6,731
ROCKY MTN	758	854		99	633	758	3,102
EASTERN	324			53	9,646	411	10,434
SOUTHERN	2		34	81	20,536	717	21,370
USA	3,747	3,297	121	897	43,432	12,976	64,470
5 YEAR AVERAGE							59,471

ACRES BURNED: Year to date

AREA	BIA	BLM	FWS	NPS	STATES	USFS	TOTAL
ALASKA	46,417	50,615	100,913	12,830	45,052	2	255,829
NORTHWEST	65,725	88,773	7,918	4,251	113,343	288,121	568,131
CA-NORTHERN	137	5,416	8,042	4,507		138,423	156,525
CA-SOUTHERN		29,946		17	118,931	69,751	218,645
NORTHERN	73,163	11,552		24,804	37,407	125,458	272,384
GB-EASTERN	1,443	247,146		46	93,559	538,008	880,202
GB-WESTERN		197,020			4,421	14,147	215,588
SOUTHWEST	31,668	124,311	7,683	24,763	218,216	154,679	561,320
ROCKY MTN	25,830	38,648		2,436	12,937	15,635	95,486
EASTERN	16,399			940	87,352	4,624	109,315
SOUTHERN	12		15,799	3,763	397,182	37,936	454,692
USA	260,794	793,427	140,355	78,357	1,128,400	1,386,784	3,788,117
5 YEAR AVERAGE							12,347,704

CANADA FIRES AND HECTARES

PROVINCES	LAST WEEK	YEAR TO DATE
BRITISH COLUMBIA	*	3,914 26,437
YUKON TERRITORY	*	253 268,281
ALBERTA	*	766 28,607
NORTHWEST TERRITORY	*	615 2,999,731
SASKATCHEWAN	*	649 566,395
MANITOBA	*	535 1,008,303
ONTARIO	*	1,004 83,358
QUEBEC	*	441 115,917
NEWFOUNDLAND	*	142 110,550
NEW BRUNSWICK	*	347 174
NOVA SCOTIA	*	209 130
PRINCE EDWARD ISLAND	*	22 16
NATIONAL PARKS	*	149 73,480
TOTALS	*	9,046 5,281,372

Canada is reporting weekly on Wednesdays.

----- NATIONAL INTERAGENCY COORDINATION CENTER -----

United States
Department of
Agriculture

Forest Service

State and Private
Forestry

Washington, DC

31 October 1994

Western Forest Health Initiative



II. Executive Summary

Innovative and extraordinary measures are needed to restore forest health in stressed forests. Although not all forests are unhealthy, restoration of forest health is a nationwide problem and a national priority for the Forest Service (FS) ("Healthy Forests for America's Future: A Strategic Plan"). The dynamic nature of forested ecosystems, combined with human interactions, provides a vast array of challenges to our goal of maintaining healthy forest ecosystems.

The Western Forest Health Initiative (WFHI) directly supports the "Forest Service Ethics and Course to the Future," which describes the management context and helps focus our priorities on providing sustainable benefits to the American people and the world.

For the purposes of this report, forest health is defined as:

"A desired state of forest health is a condition where biotic and abiotic influences do not threaten resource management objectives now or in the future. (From "Healthy Forests for America's Future")

Ultimately, forest managers must understand what healthy forests and ecosystems can be, as well as what the public envisions them to be. Resource management objectives (RMO's) that are based upon a full array of human needs and values must be considered in this process. This report is a framework for action and details implementation.

Background

While forest health concerns currently are most apparent in the West, the East is also affected, where there are problems with southern pines and eastern hardwoods. Southern pine forests are increasingly susceptible to southern pine beetle, and the continuous spread of introduced pests such as gypsy moth and hemlock woolly adelgid affects other forests. A balanced national strategy that addresses similar problems in all parts of the country is essential.

Congress and the public have been interested in forest health for the past several years. In response to 1987 Congressional appropriations hearings, the FS prepared "Forest Health Through Silviculture and Integrated Pest Management: A Strategic Plan" in 1988. Successes under the 1988 Plan included initiation of the Forest Health Monitoring Program, strengthening of Regional Forest Pest Management staffs, and creation of the new National Center of Forest Health Management. However, significant concerns about forest health remained.

In 1992, Congress held five hearings that focused on the health of western forests that had been altered over time by successful fire control and other practices, and now severely damaged by drought, pests, and wildfire. Congress wanted to know how the damaged forests would be restored and how similar damage would be prevented elsewhere. At the same time, there was growing concern about exotic forest pests like the Asian gypsy moth, as well as wildfire and pest problems in the urban-wildland interface.

As a result, the 1988 Plan was updated in 1993 as "Healthy Forests for America's Future: A Strategic Plan." It continues the goals of the 1988 Plan and incorporates new goals that specifically address exotic pests, problems in the urban-wildland interface, prevention, and restoration. There have been some significant successes under this plan, but preventing further widespread damage in western forests and restoring them continue to be the biggest challenges. The approach must be accelerated to fully address the urgency and magnitude of the problems. The WFHI responds to this need.

Information Gathering

In September 1994, the Chief of the FS chartered the WFHI to identify FS priority activities to restore western forested ecosystem health. It was decided that range land ecosystem health would not be included in the analysis. An FS team listened to a wide spectrum of interested parties, including the Congress, non-governmental organizations, tribal leaders, States, and FS field units.

To determine the magnitude of the problem, the team requested forest health project information and recommendations from all western National Forests (NF's) (92), each State Forester (16), and Research Stations. It was necessary to set priorities for forest health projects to improve program efficiency. The team developed project priorities for forest health, including reduction of catastrophic changes in key ecosystem structure, composition, and processes; restoration of critical ecosystem processes; and restoration of stressed sites.

Synthesis and Refinement

Links to other initiatives, such as the Eastside Forest Health Assessment and the Interdepartmental Wildfire Management Policy and Program Review, were identified. Forest health project data was validated. Additional information was gathered on National Forest System (NFS) reforestation projects in areas burned in 1994. This information was used to identify actions now occurring on the ground.

Recommendations The recommendations were grouped into the following areas:

- Strategy
- Communication and Coordination
- Budget
- Policy
- Law

The most important of these recommendations, "Key Recommendations," are listed at the end of this Executive Summary and emphasized in the Recommendations section of this report.

Affirmations

In some cases, the team found that the FS had already taken action, directly or indirectly, to address specific barriers. These actions are described in the "Affirmations" section of this report to reinforce their importance and are grouped as follows:

- Actions Already Underway
- Emphasis in Direction (Principles)
- Options Not Recommended

Projects

Of the many planned and funded forest health projects originally submitted to the team, 330 were identified as top priority by NF's. They are scheduled for implementation within the next 24 months and are considered to be excellent demonstration projects. Projects to follow the 1994 fire season have also been requested, but a complete list of these (including rehabilitation, salvage, and restoration) will not be available until February 1995. Over 1,000 longer-term, unfunded forest health projects on NF's were also submitted. This project data is being used to determine the nature and extent of forest health problems nationally. In addition, projects that were submitted by the western State Foresters are under review for joint funding opportunities.

Key Recommendations

1. The FS should develop framework for addressing forest health that strengthens, expands, and accelerates the 1993 "Healthy Forests for America's Future" strategic plan. Key components should:
 - Establish an interagency working group to develop a nationwide forest health strategy.
 - Define the parameters and indicators that describe the health of a forested ecosystem, including biological, ecological, and societal elements.
 - Describe the existing health of the nation's forests.
 - Revise Land and Resource Management Planning (LRMP) direction to incorporate considerations and descriptions of forest health in forest plan goals and objectives.
 - Establish and accomplish annual forest health objectives by region/forest/district.

2. Clear definitions of the new, restructured, expanded budget line items (EBLI's) should be reported to the congressional appropriation committees to assist the FS in conducting broad based forest health activities. The FY 1996 *FS Explanatory Notes* will cover this.
3. The national importance of the Forest Health Monitoring program (a collaboration between the FS and Environmental Protection Agency (EPA)) should be clearly explained and highlighted in the budget. Coverage needs to include all States with serious forest health problems.
4. Establish a task force to evaluate ecological risk related to:
 - national "models" for risk analysis,
 - forest planning and decisionmaking, and
 - coordination among agencies and NGO's.
5. A short-term system to monitor on-the-ground progress of the WFHI should be established in FY 1995. For the long term, this system should be developed in conjunction with the All Resource Reporting system and Government Performance and Results Act of 1993 (GPRA) initiative.
6. Reinforce coordination with the National Wildfire Coordinating Group (NWCG) Prescribed Fire and Fire Effects Working Team to develop alternative approaches for addressing prescribed burning for forest health as it relates to Federal and State Clean Air Act standards. Proposed approaches should be discussed with States that have more restrictive standards than the Federal Government.
7. Establish a task force to evaluate and refine guidance (based on existing knowledge and techniques) on:
 - evaluating the costs and benefits of fighting wildfires in unhealthy forests and
 - "escaped fire situation" analyses.
8. Under the umbrella of the Interagency Memorandums of Understanding (MOU's) on Imperiled Species and Endangered Species Act Coordination, establish a task force to develop guidance on:
 - streamlining Endangered Species Act (ESA) Section 7 consultation while ensuring compliance with requirements;
 - identifying and incorporating conservation strategies into project design; and
 - identifying priorities for listed and proposed species habitats.
9. A clear, concise agency message should address the role of disturbances in the ecosystem. It should tie to the national strategic communication plan for forest health, and to the FS forest health strategic plan.

10. Finalize and implement a comprehensive forest health communications plan that has been in development since last fall. The plan should include:
 - public information messages on science and policy aspects of forest health;
 - public education on purpose, design, and implementation of on-the-ground forest health practices;
 - techniques to improve the quality of public participation in planning and implementing forest health projects; and
 - a "needs assessment" that identifies areas for continued or new research aimed at improving public communication, education, and participation in forest health.
11. Assess the current skills of FS line officers and cooperators and develop a skills bank. Promote additional training in prescribed burning, fire management, and risk analysis.
12. Legislation is needed to authorize land management services contracts (LMSC) on the NFS lands. The existing Washington Office LMSC Team should develop the contract language needed for implementation.
13. Refine, validate, and expand the data base on forest health projects to all Regions. This data base should be used to determine the nature and extent of forest health problems nationally for further policy/budget action.
14. Implement the WFHI recommendations and establish a process for activities and a timetable.



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