CLEAN AIR PROTECTION PROBLEMS AT NATIONAL PARKS AND WILDERNESS AREAS

HEARING

BEFORE THE

ENVIRONMENT, ENERGY, AND NATURAL RESOURCES SUBCOMMITTEE

OF THE

COMMITTEE ON GOVERNMENT OPERATIONS HOUSE OF REPRESENTATIVES

ONE HUNDRED THIRD CONGRESS

SECOND SESSION

APRIL 29, 1994

Printed for the use of the Committee on Government Operations

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CLEAN AIR PROTECTION PROBLEMS AT NATIONAL PARKS AND WILDERNESS AREAS

FRIDAY, APRIL 29, 1994

HOUSE OF REPRESENTATIVES,
ENVIRONMENT, ENERGY,
AND NATURAL RESOURCES SUBCOMMITTEE
OF THE COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, DC.

The subcommittee met, pursuant to notice, at 9 a.m., in room 2247, Rayburn House Office Building, Hon. Mike Synar (chairman of the subcommittee) presiding.

Present: Representatives Mike Synar and William F. Clinger, Jr.

Also present: Representative Henry A. Waxman.

Staff present: Sandra Z. Harris, staff director; Ruth Fleischer, counsel; Elisabeth R. Campbell, clerk; and Charli E. Coon, minority professional staff, Committee on Government Operations.

OPENING STATEMENT OF CHAIRMAN SYNAR

Mr. SYNAR. The subcommittee will come to order.

This subcommittee first examined the effectiveness of the Federal programs which are supposed to protect our national parks and wilderness areas from the effects of air pollution 4 years ago.

We found 4 years ago that these programs worked barely, if at all, to safeguard some of America's most precious resources. At that time we looked at two kinds of programs, prevention of significant deterioration for new sources and best available retrofit technology or BART for existing sources. We found that neither was effective and that one had barely been tried.

We released a General Accounting Office report 4 years ago at that hearing that found that over 90 percent of the polluting facilities which affected the parks and the wilderness areas were exempt from PSD because of their size or age. Even worse, the PSD regulations were hampered by an inefficient administration system which failed to get paperwork to the parties in time to be useful.

We found 4 years ago that the BART program, which applies to existing, sources was in even worse shape than PSD. Only one case affecting the Grand Canyon had been brought using this cumbersome and expensive authority.

Finally, 4 years ago we criticized EPA for having failed—since 1980—to issue regional haze regulations, the only effective method for controlling visibility problems.

Well, here we are 4 years later. What has changed since 1990?

EPA still has not issued regional haze regulations. And only one more case is being brought against the existing BART source, at

Mt. Zirkel Wilderness Area in Colorado. There are still other problems we will examine today that hinder our efforts to protect our Nation's crown jewels.

But there is something of a bright side, too.

After that hearing 4 years ago, Congress included provisions in the Clean Air Act Amendments of 1990 which were designed to have major impact on air quality of our national parks and wilderness areas.

The eight-State Grand Canyon Visibility Transport Commission created by the 1990 amendments is up and running. It should deliver its options report to EPA by November 1995 for protecting the golden circle of magnificent national parks and wilderness areas in the Colorado plateau.

Its working groups, which include members of industry, government, and environmental organizations, hopefully will provide an administrative and scientific model for further interstate air pollution control efforts.

Federal land managers have not stopped the States from issuing new source permits over their objections. But negotiations between State air quality officials and Federal land managers often produce significantly tighter PSD permits and greatly reduced emissions. Administrative weaknesses found in 1990 have largely been corrected.

The acid rain title of the Clean Air Act Amendments should produce some noticeable visibility improvements in the Eastern United States in the future, although the exact amount of change is still unknown. Unfortunately, they are not likely to produce positive results in the Western United States.

In the end, all these improvements won't protect the most sensitive and special places. We need regional haze regulations now; 17 years is simply too long for the Congress and the American people to wait.

This morning, I am joined by my closest Republican friend and dear colleague, ranking minority on Government Operations and just a darn good guy, Bill Clinger.

Mr. CLINGER. My goodness. Thank you, Mr. Chairman.

I want to commend you on holding this hearing regarding the Federal and State efforts to maintain clean air in our national parks and wilderness areas, an issue that you and I visited some 4 years ago, and it is good to return to it to see where we are and what steps we have taken to go forward and where we need to provide additional attention.

It is an important issue as we find an increasing use of our national parks by our citizens. In many cases, these parks are some of the most pristine and spectacular wilderness areas, such as the Grand Canyon you referred to, that our citizens have to enjoy in this country.

However, air pollution can take away, does take away from the quality of that wilderness experience that people look forward to when they visit our national parks.

Since the last hearing which the subcommittee held on this issue back in 1990, the Clean Air Act has been enacted. Although there still may be some problems, hopefully there has been progress made since the enactment and now implementation of this land-

mark legislation. Although I don't have a national park in my district, I do have a large national forest, the largest, the only one in Pennsylvania. It is a national forest which receives over 12 million visitors a year, one of the most heavily used national forests in the Nation, the Allegheny National Forest. Although up to this time visibility and air pollution have not been a problem, it is clearly something of a concern for the future.

I want to thank you again for holding this hearing. I look forward to hearing from the witnesses about the problems and the potential solutions, and I would ask unanimous consent, Mr. Chairman, that a statement by Mr. Hastert, the ranking member on this subcommittee, might be entered in the record, and also that the record might be held open for questions that might be submitted in writing.

Mr. SYNAR. Without objection.

[The prepared statement of Mr. Hastert follows:]

Opening Statement
The Honorable J. Dennis Hastert
Ranking Member
Environment, Energy, and Natural Resources Subcommittee
April 29, 1994

Mr. Chairman:

While I do not have any national parks or wilderness areas located in my district, I nevertheless appreciate the concern for the quality of air on these federal lands by those members who do have these sites in their districts. Indeed, I share their interest in ensuring that clean, clear air is maintained not only in our nation's parks, but elsewhere as well.

However, in our efforts to improve the quality of the air throughout our country, it is important that we do so in a reasonable and responsible manner. This is especially true during this time of limited resources. Congress must prioritize our nation's programs and fund them accordingly. For environmental programs, this means using the best science available, peer reviews, cost-benefit analyses and risk assessment in finding solutions to our many and varied environmental concerns.

Also, we must recognize that adopting a "one size fits all" solution is not necessarily the most efficient or responsible way to correct the quality of our nation's air. Indeed, just as the geography of our country's landscape varies from region to region, so do the remedies necessary to address the air quality issues in these areas.

If we proceed in the prudent manner that I have outlind, I believe that we will improve not only the quality of the air, but also the quality of life of our citizens.

I look forward to hearing from our witnesses today as we discuss this important air quality issue.

Mr. SYNAR. Again, thank you, Bill, for coming this morning and getting this hearing started.

On our first panel this morning are Bernice Steinhardt, Mr. McGee, and Mr. Everett from the General Accounting Office, and Professor Warren White from Washington University in St. Louis.

It is the policy of this subcommittee in order not to prejudice past or future witnesses that we swear all our witnesses in.

Professor White would like to be affirmed versus sworn in, so if you would all rise.

Do you first of all have any objections to being sworn in?

If not, raise your right hand.

Do you solemnly affirm that the testimony you are about to give is the truth, the whole truth, and nothing but the truth?

[Witnesses affirmed.]

Mr. SYNAR. Well, welcome back, Ms. Steinhardt.

Ms. STEINHARDT. Thank you very much.

Mr. SYNAR. We are glad to have you here.

This is your solo run this time.

Ms. STEINHARDT. Well, I am joined by Mr. McGee.

Mr. SYNAR. I will be nice.

How is that?

I will be semi-nice.

Your entire testimony will be made a part of the record. And at this time we would ask you to summarize. We are glad to have you back.

Henry, do you have an opening statement?

Mr. WAXMAN. No.

Mr. SYNAR. Ms. Steinhardt.

STATEMENT OF BERNICE STEINHARDT, ASSOCIATE DIRECTOR, ENVIRONMENTAL PROTECTION ISSUES, RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY WILLIAM F. McGEE, CPA, ASSISTANT DIRECTOR; AND PROFESSOR HARRY C. EVERETT, RALEIGH, NC

Ms. STEINHARDT. Thank you very much.

Good morning, Mr. Synar, Mr. Clinger, and Mr. Waxman. We appreciate the opportunity to be here today to talk about our review of Federal and State efforts to address visibility in the national parks and wilderness areas. As you know, 4 years ago, we reported to you that the prevention of significant deterioration program or the PSD program under the Clean Air Act was not very effective in protecting the air quality of these treasured areas. With the passage of the 1990 Clean Air Act amendments, the Congress added some new features to help remedy the problems faced by our parks and wilderness areas, and you asked us to see what effect these measures have had.

Today, I will tell you that despite some progress since our last report to you, visibility in parks and wilderness areas is still a serious problem. First, the PSD program and other Clean Air Act provisions to control pollution from individual sources near these protected areas, called class I areas, have had only a limited impact.

As you know, the PSD program requires facilities locating in clean air areas to meet strict emission limits and to install the best

available control technology. On the positive side, we found that the Park Service is more involved in reviewing the applications for PSD permits as they are required to under the program.

Although they haven't dissuaded States from issuing permits to facilities whose emissions could cause visibility impairment, they have had some success in negotiating reduced emission levels or offsets elsewhere. But the Park Service's successes have to be considered against the fact that nearly all, 99 percent, in fact, of the facilities that are located near class I areas are exempt from PSD controls, either because they fell below a size threshold or because they were grandfathered. So not surprisingly, almost all of the air pollution that is emitted near class I areas comes from these exempt sources.

In certain cases, the Clean Air Act allows regulators to take action against these grandfathered facilities. If they can demonstrate that these facilities are contributing to or are causing visibility impairment, authorities can require facilities to install best available retrofit technology or BART. But in practice this provision has been rarely used, only once in 14 years, and it turned out to be very costly and difficult to meet the legal standard of evidence that the government felt was necessary. But perhaps even more important, neither of these authorities, neither the PSD program nor the BART authority, deal with the regional sources of air pollution, sometimes hundreds of miles away, that are also significant contributors to visibility impairment in class I areas.

Even though these long-distance sources could be controlled under the Clean Air Amendments enacted in 1977, EPA has been putting off issuing regional haze regulations, as you said, Mr. Chairman, since 1980, when it said it would wait until it had sufficient scientific data. This still seems to be EPA's position.

During our review, EPA officials told us they were still uncertain that these regulations were needed, and they said they were waiting for more information before reaching a final decision but the agency and the Park Service have not been especially aggressive in obtaining this additional information.

While the 1990 amendments authorized additional visibility research and monitoring activities which are in fact underway, the Park Service has actually scaled back its visibility monitoring program since the 1990 amendments, going from 62 monitors in place then to 37. We are also told that EPA's budget, its budget request for fiscal year 1995, has eliminated funding altogether for an atmospheric research component related to visibility.

EPA says it is also waiting for recommendations from the Grand Canyon Visibility Transport Commission before issuing regional haze regulations. This commission was created by the 1990 amendments which also authorized EPA to establish other regional commissions to study and make recommendations to the EPA Administrator on measures to remedy visibility problems, but EPA hasn't established any other commissions, apparently because it wasn't willing to devote the necessary resources and it is not clear that the Grand Canyon commission's recommendations will be of much use for other parts of the country, especially the East where pollutant levels and meteorology are quite different.

Another reason that EPA held off issuing regional haze regulations was because the agency expected that implementation of title IV of the 1990 amendments, the acid rain control measures, would significantly reduce visibility impairment caused by sulfur dioxide and nitrogen oxide emissions.

I know that you will probably remember, Mr. Chairman, when we were here 4 years ago that Mr. Rosenberg, then the Assistant Administrator for Air, repeatedly made this promise, but EPA has since concluded that in fact title IV will not solve all of its visibility problems. In the East the agency projects visibility to improve by, roughly, 20 percent on an average day.

We have here a couple of computer-simulated pictures of Shenandoah, and perhaps Mr. McGee might just explain what they tell us.

Mr. MCGEE. As you indicated in your opening remarks, Mr. Chairman, that there would be some visibility improvement expected in the East thanks to the title IV provisions, and these pictures attempt to depict what that improvement would be on an average day. Now, it is important to point out that on some days the improvement would be much more significant.

[Slides shown.]

[The pictures referred to can be found in the appendix.]

Mr. MCGEE. This is a composite-aggregated average of what the visibility looks like now. The picture on the far right, and the one on the left depicts the improvement on an average day, and you can see it is not all that dramatic.

Ms. STEINHARDT. In fact, I defy you to see the difference. Even on a real day, not a computer-simulated day, Park Service officials say it will not be apparent to many park visitors. More importantly, perhaps in the West, where most of the class I areas are, EPA projects little or no change in visibility as a result of title IV. And I think you can see we have a map that lays out the 158 class I areas, and 80 percent of them are all in the West. The remaining 20 percent are in the East. That 80 percent will not be affected at all by the acid rain provisions because it is expected that the reductions in current emission levels in the West will be offset by a growth in new sources.

Although we might be critical of EPA for not doing more to get the information it claims to need, we also recognize that the Park Service has been saying for some years now that modeling and monitoring techniques are available to begin to develop regional haze regulations. The National Research Council, and I know Dr. White, who will talk more about this, has since confirmed this, noting that while additional research would be worthwhile, current scientific knowledge is adequate and the control technologies are available for taking regulatory action to improve visibility.

So while there may be a need for more data to fully refine regional haze regulations, we believe the burden of proof now rests with EPA to justify why it should not begin the regulatory process. We think the Park Service and the National Research Council have made convincing arguments, and we believe the EPA Administrator ought to begin now to develop a control strategy for addressing visibility impairment.

Mr. Chairman, this concludes my remarks. I look forward to your questions.

Mr. SYNAR. Thank you very much for the excellent testimony.

[The prepared statement of Ms. Steinhardt follows:]

United States General Accounting Office

GAO

Testimony

Before the Environment, Energy and Natural Resources Subcommittee, Committee on Government Operations, House of Representatives

For Release
on Delivery
Expected at
9:00 a.m. EDT
Friday
April 29, 1994

AIR POLLUTION

Regional Approaches Are Needed to Protect Visibility in National Parks and Wilderness Areas

Statement of Bernice Steinhardt,
Associate Director, Environmental Protection Issues,
Resources, Community, and Economic Development Division

GAO/T-RCED-94-102

Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to discuss federal and state efforts to address the problem of visibility impairment in our national parks and wilderness areas. While these areas are among our greatest national treasures, an important part of our enjoyment is the ability to see them clearly. Congress recognized this in the Clean Air Act Amendments of 1977, when it established a national goal of correcting and preventing pollution that causes visibility impairment in the 158 large national parks and wilderness areas, referred to as class I areas. Seventeen years later, however, visitors to these areas are not able to fully enjoy the spectacular views, such as those at the Grand Canyon, that would exist in the absence of air pollution. Haze caused by human activities often eliminates important color distinctions and makes distant landscape features difficult or impossible to see. According to the National Park Service, some degree of visibility impairment caused by air pollution occurs in every park that it manages, and visibility degradation is a constant problem at some locations.

We testified before this Subcommittee in March 1990 regarding the extent to which the Prevention of Significant Deterioration (PSD) program was helping to protect air quality in class I areas.[1] The PSD program was designed to ensure that the construction of new facilities would not contribute to air quality deterioration in areas where the air is already clean. In our 1990 testimony, we noted that the program was doing little to protect air quality in class I areas. Our testimony today responds to your request that we determine whether there have been improvements in the PSD program in the past 4 years and that

[1] Protecting Parks and Wilderness From Nearby Air Pollution Sources (GAO/T-RCED-90-43, March 9, 1990)

we examine several other federal initiatives intended to remedy or prevent visibility impairment in class I areas.

In short, we found that despite some progress since our last testimony to you, visibility impairment in many class I areas remains a serious problem.

- First, programs to control air pollution from individual sources near class I areas have had only a limited impact and are, in some respects, costly and difficult to implement. Further, some pollution sources are exempt from the program either because they existed prior to 1977 and were grandfathered or because they fall below an emission threshold.

- Secondly, regional sources of air pollution are also significant contributors to visibility impairment. Even though these regional sources could be controlled under existing Clean Air Act authorities, Environmental Protection Agency (EPA) has not issued regulations or initiated other control measures to address the problem.

EFFORTS TO REDUCE VISIBILITY IMPAIRMENT FROM NEARBY SOURCES ARE NOT EFFECTIVE

As was the case when we testified before this Subcommittee in March 1990 which followed our February 1990 report,[2] the PSD program continues to provide limited opportunities for improving visibility impairment in class I areas. The PSD program prohibits the construction or modification of "major emitting facilities" in areas that have attained national air quality standards unless they demonstrate that they will not exceed

[2] Air Pollution: Protecting Parks and Wilderness From Nearby Pollution Sources (GAO/RCED-90-10, February 7, 1990)

certain air emission levels and install the best available control technologies. However, because PSD requirements relate to the construction of facilities, they do not affect facilities built prior to 1977, unless these facilities undergo major modification. Furthermore, PSD requirements do not apply to many minor sources whose cumulative emissions are believed to adversely impact visibility in class I areas.

In our 1990 report, we found that only 1 percent of the sources near the class I areas we looked at were subject to PSD requirements; 99 percent were exempt. Moreover, these exempt sources account for a significant portion of the air pollutants emitted near class I areas. For example, in the Shenandoah National Park approximately 98 percent of the sulfur dioxides and 87 percent of nitrogen oxides--two of the primary contributors to visibility impairment--emitted near the Park in 1992 came from exempt facilities.

Concerned that existing sources not subject to PSD requirements may be major contributors to visibility impairment in class I areas, EPA's Assistant Administrator for Air and Radiation established a workgroup in November 1993 to examine this issue. While workgroup members agree that significant visibility problems in class I areas are directly attributable to existing sources, they have not reached a consensus on how best to solve the problem.

Park Service Has Influenced Emission Levels For New Facilities

Although the scope of the PSD program is not sufficiently inclusive, it is nevertheless working somewhat better than when we reported to you in 1990, specifically, with regard to the Park Service's role in reviewing permit applications. One of the problems with the PSD program that we reported to you in 1990 was

that some permit applications for proposed new facilities were not being forwarded to the federal land managers having jurisdiction over class I areas. According to Park Service officials, the process has improved, with EPA and state agencies more consistently forwarding new permit applications. Further, EPA guidelines provide that generally the federal land managers need to be notified of permit applications when a proposed facility will be located within 100 kilometers of a class I area. However, Park Service officials would also like an opportunity to review some applications for facilities beyond this range.

With its increased opportunity for reviewing applications, the Park Service appears to be having some success in helping control the rate of increase in emissions that contribute to visibility impairment. For example, following the Park Service's review of 13 permit applications for proposed facilities near the Shenandoah National Park, emission levels actually permitted were about 40 percent or almost 24,000 tons less than the proposed emission levels in the original permit applications. In aggregate, however, the new facilities will contribute an additional 31,000 tons per year of sulfur dioxide and nitrogen oxides.

Another example of the Park Service negotiating reduced emission levels recently occurred in Alaska. Alaska's Department of Environmental Conservation issued a PSD permit for the construction of a new 50-megawatt clean coal demonstration power plant to be built less than 4 miles from the border of the Denali National Park, even though the Park Service recommended that the state deny the permit. Subsequent to the permit's approval, however, Park Service officials were instrumental in negotiating reduced emissions from a nearby power plant to help offset most of the increased emissions from the new facility.

Nevertheless, while federal land managers are able to negotiate reduced emission levels for some proposed PSD permits, state permitting authorities have approved some permits despite the Park Service's recommendations that the permits not be approved unless increases in emissions were offset by reductions from other sources. For example, in 1990 the Park Service recommended to Virginia that the state not issue permits for new pollution sources near the Shenandoah National Park unless the additional emissions would not adversely affect air quality in the park or emission reductions were achieved elsewhere. In 1992, the Park Service made a similar recommendation for the area surrounding the Great Smoky Mountains National Park. In both cases, states bordering the parks have continued to issue permits despite the Park Service's recommendations.

Provisions to Reduce Emissions From Existing Individual Sources Are Difficult And Costly

Although the PSD program generally exempts sources constructed prior to the implementation of the program, the 1977 amendments allow regulators to require these sources to install best available retrofit technology (BART), if they can demonstrate that these sources are causing or contributing to visibility impairment in class I areas. However, this authority has only been used once in the 14 years in which the BART program has existed. According to EPA and Park Service officials, BART is not an effective way of controlling visibility impairment because of the extensive time and money needed to develop legally sufficient studies which attribute specific emissions of individual pollution sources to visibility impairment. According to Park Service officials, in the one case in which BART was used, approximately 10 years was required and an estimated $5 million was spent on studies of air pollution entering Grand Canyon National Park from the nearby Navajo Generating Station. While the Navajo Generating Station is a primary contributor to

certain visibility impairment episodes in the Grand Canyon, other more remote sources also contribute to the problem.

EFFORTS TO ADDRESS VISIBILITY IMPAIRMENT CAUSED BY REGIONAL SOURCES HAVE BEEN LIMITED

Modeling studies conducted by EPA and the Park Service suggest that regional sources may at times account for over 80 percent of the visibility problems in some class I areas. To address these regional sources, in 1980 EPA announced its intention to issue regulations to control air pollution within a broad region surrounding class I areas. The agency deferred issuing the regulations, however, until sufficient scientific data on which to base the regulations became available. Despite findings by the National Research Council of the National Academy of Sciences and the Park Service that adequate scientific data exists to begin developing regional haze regulations, EPA officials told us they are not certain that the regulations are needed and are waiting for additional information before reaching a final decision.

Additional Research Undertaken But Monitoring Has Been Curtailed

The 1990 amendments required EPA, working with the Park Service and other federal agencies, to significantly expand its research and monitoring activities to address visibility impairment problems in class I areas and authorized $8 million per year for 5 years for this purpose. EPA and Park Service visibility funding has increased since enactment of the 1990 amendments to support a number of research and monitoring efforts, including the Mohave Project[3], the Grand Canyon

[3]The Mohave Project is a study of the emissions from the Mohave power plant and their impact on visibility in class I areas in southwestern states.

Visibility Transport Commission[4], and other atmospheric research related to visibility impairment.

Since fiscal year 1991, visibility funding levels have fluctuated between $5.5 and $6.6 million. According to EPA and the Park Service, the requested funds for fiscal year 1995 are about $4.6 million. According to EPA officials, the decrease is due to a reduction in visibility research by EPA's Office of Research and Development, in favor of higher priority health related research. However, officials note that some of this research--on small particulates--has application to visibility problems. Furthermore, EPA and Park Service officials are doubtful that the agencies will receive the resources needed for future years because of overall budget constraints and competition with other higher priority programs.

Ironically, although overall program funding increased, support for air quality monitoring in class I areas actually decreased following enactment of the 1990 Clean Air Act Amendments. The data from visibility monitors support research projects and are useful in identifying the sources and types of pollutants that are impacting visibility in class I areas. Yet, the Park Service's funding for monitoring was reduced by more than 37 percent during fiscal years 1991-94. As a result, the number of visibility monitoring sites in class I areas was reduced by 40 percent, dropping from 62 to 37. With fewer monitors, the Park Service has less data to demonstrate the impact that pollutants have on visibility.

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[4]The Grand Canyon Visibility Transport Commission is responsible for assessing the impact of long distance transport of pollutants on the visibility of the Grand Canyon National Park and other class I areas in southwestern states and recommending measures to improve visibility in these areas.

No Additional Transport Commissions Established

The 1990 amendments authorize EPA, on the Administrator's initiative or at the request of states, to designate visibility transport regions wherever the Administrator believes that the interstate transport of air pollution contributes significantly to visibility impairment in class I areas. For each visibility transport region designated, the Administrator is required to establish a visibility transport commission consisting of the governors of the affected states and representatives of EPA and the federal land managers. The commissions are supposed to assess the information pertaining to adverse impacts on visibility and recommend to the Administrator what measures, if any, should be taken to remedy any adverse impacts.

However, only the Grand Canyon Visibility Transport Commission, which was specifically required by the 1990 amendments, has been established. EPA has delayed issuing regional haze regulations pending the recommendations of this Commission, but Park Service officials and others question the applicability of the Commission's findings to class I areas in other regions of the country, especially eastern states, where pollutant levels and meteorology are quite different. Further, EPA and Park Service officials doubt that other visibility transport commissions will be established. According to these officials, the agencies have not considered visibility a high enough priority to devote the resources required at the federal level to establish and adequately support visibility transport commissions. Secondly, few states have expressed an interest in participating in visibility transport commissions.

Other Clean Air Act Provisions Are Not Expected To Have Much Impact

Another reason that EPA held off issuing regional haze

regulations was because the agency expected that the implementation of title IV of the 1990 amendments--acid rain control measures--would significantly reduce visibility impairment in class I areas caused by sulfur dioxide and nitrogen oxides emissions. However, EPA has since concluded that while reductions of these pollutants could improve visibility in some class I areas in eastern states, the reductions would not solve all of the visibility problems. Although the reductions are estimated to improve visibility by approximately 20 percent on an average day in many eastern parks, Park Service officials told us that this level of improvement will not be apparent to many park visitors.

In western class I areas, EPA concluded that any reductions in emissions of sulfur dioxide and nitrogen oxides achieved by the implementation of title IV would be offset by increases in pollution caused by population growth and the construction of new emission sources. Therefore, EPA projects little or no change in visibility for national parks and wilderness areas in western states, which account for 126 of the 158 class I areas.

Lending support to the need for regional haze regulations is a 1993 National Research Council report which concluded that neither existing nor planned emission control programs, including title IV, will solve the nation's visibility impairment problem. The report argued that real progress in reducing visibility impairment will require regional programs that control pollution from sources in large geographic areas. According to the Council's report, visibility impairment is probably as well understood as any other air pollution problem. Consequently, the report concluded that while additional research is worthwhile, current scientific knowledge is adequate and control technologies are available for taking regulatory action to improve visibility. In commenting on the Council's report, the Park Service stated that the report confirmed what it has believed for years, that

scientific data and control technologies are available to begin developing regional haze regulations.

CONCLUSIONS AND RECOMMENDATIONS

Mr. Chairman, we know that your Subcommittee has a long standing interest in improving visibility in national parks and wilderness areas. In view of the limited success of the PSD and other programs in controlling air pollution in class I areas and in light of increasing scientific evidence that regional sources are major contributors to visibility impairment, we believe that some type of regional approach is needed to address the problem. EPA has indicated its intentions to wait for additional information before deciding whether to issue regional haze regulations. However, it is unclear when the information will be available in view of reductions in the number of monitoring sites in class I areas and the fact that only one visibility transport commission has been established.

At the same time, it should be noted that the National Research Council and the Park Service have both stated that current scientific knowledge is adequate and control technologies are available for taking regulatory actions to improve visibility in class I areas. It seems to us that they have made convincing arguments. Accordingly, we recommend that the EPA Administrator begin developing a control strategy for addressing visibility impairment caused by regional sources.

Mr. Chairman, this concludes my prepared remarks. I would be pleased to respond to any questions.

Mr. SYNAR. Professor White, your testimony will also be made a part of the record. We ask you to summarize in about 5 minutes.

STATEMENT OF WARREN H. WHITE, PROFESSOR, WASHINGTON UNIVERSITY, ST. LOUIS, MO

Mr. WHITE. Good morning, Mr. Chairman and members of the committee.

I am here to summarize the general conclusions and recommendations of the committee on haze in national parks and wilderness areas. I am sure that all my colleagues on the committee are as delighted as I am at your expression of interest in our work.

Our committee was convened by the National Research Council at the beginning of 1990, and included people knowledgeable in meteorology, atmospheric chemistry and optics, air pollution monitoring and modeling, statistics, control technology, and environmental law and public policy.

We were charged to develop working principles for assessing the relative importance of anthropogenic emission sources that contribute to haze in class I areas and for considering various alternative emission control measures.

The complete design of a program for protecting and improving visibility in national parks and wilderness areas must involve many policy issues that transcend science and the committee's expertise. However, present scientific knowledge about visibility impairment has several important implications for policymakers seeking to approach the national goal of remedying and preventing man-made visibility impairment in class I areas. These implications include the following.

Progress toward the national visibility goal will require limits on the emissions of pollutants that can cause regional haze. A strategy that relies only on influencing the location of sources, although perhaps useful in some situations, would not be effective in general.

Progress toward the national visibility goal will require regional programs that operate over large geographic areas. Class I areas cannot be regarded as potential islands of clean air in a polluted sea.

A program that focuses solely on determining the contribution of individual emission sources to visibility impairment is doomed to failure. Instead, strategies should be adopted that consider many sources simultaneously on a regional basis, although assessment of the effect of individual sources will remain important in some situations.

Visibility policy and control strategies might need to be different in the West than in the East. In the East, sulfates derived from the SO_2 emissions of coal-fired power plants account for about one-half of all anthropogenic light extinction. Reductions in these emissions that should occur in the next two decades as a result of the acid rain control program alone are expected to yield a reduction of about one-quarter in the average anthropogenic light extinction.

In the West, no single source category dominates. An effective western visibility strategy will therefore have to address many source types, such as electric utilities, gasoline- and diesel-fueled vehicles, petroleum and chemical industry sources, forest management burning and fugitive dust. Moreover, present rapid popu-

lation growth in the West is projected to continue during the coming decades, bringing with it the potential for increases in many of these categories.

Achieving the national visibility goal will require a substantial long-term program. The committee's simple scoping calculations indicate that the application of all commercially available control technology would reduce but not eliminate visibility impairment in class I areas. This means that a long-term commitment to establishing and financially supporting monitoring programs is essential.

Current scientific knowledge is adequate, and control technologies are available for taking regulatory action to improve and protect visibility. Visibility impairment is probably better understood and more easily measured than any other air pollution effect. However, continued cost-effective national progress toward this goal will require a greater commitment toward atmospheric research, monitoring, and emissions control R&D.

The committee felt that the slowness of progress to date has been due largely to a lack of commitment to an adequate government effort to protect and improve visibility and to sponsor the research and monitoring needed to better characterize the nature and origin of haze in various areas. The Federal Government has accorded the national visibility goal less priority than other clean air objectives. Even to the extent that Congress has acted, EPA, the Department of Interior, and the Department of Agriculture have been slow to carry out their regulatory responsibilities or to seek resources for research. Visibility research would benefit from increased integration with other air quality research and from wider participation by the scientific community.

Visibility impairment can be attributed to emission sources on a regional scale through the use of several kinds of models. In general, the best approach for evaluating emission sources is a nested progression from simpler and more direct models to more complex and detailed models. The simpler models are available today and could be used as the basis for designing regional visibility programs. The more complex models could be used to refine these programs over time.

Reducing emissions for visibility improvement could help alleviate other air quality problems, just as other types of air quality improvements could help visibility. Emissions that contribute to regional haze also contribute to a variety of other undesirable effects on the environment and human health.

In summary, any effective visibility protection program must be aimed at preventing and reducing regional haze. An effective program must therefore control a broad array of sources over a large geographic area. Such a program would mark a considerable break from the present approach of focusing on visible plumes from nearby sources and of attempting to determine the effects of individual sources on visibility impairment.

Although visibility impairment is as well understood as any other air pollution effect, gaps in knowledge remain. Filling these gaps will require an increased national commitment to visibility protection research. With major shifts projected in present patterns of pollutant emissions, the committee believes that the time has

come for Congress, EPA, and the States to decide whether to make that commitment.

That is it.

[The prepared statement of Mr. White follows:]

PROTECTING VISIBILITY IN NATIONAL PARKS AND WILDERNESS AREAS

Statement of

Warren H. White
Chemistry Department
Washington University

before the
Subcommittee on Environment, Energy and Natural Resources
Committee on Government Operations
U.S. House of Representatives

29 April 1994

Good morning, Mr. Chairman and members of the Committee. I am here to summarize the general conclusions and recommendations of the Committee on Haze in National Parks and Wilderness Areas, on which I served. Our committee was convened by the National Research Council at the beginning of 1990, and included people knowledgeable in meteorology, atmospheric chemistry and optics, air pollution monitoring and modeling, statistics, control technology, and environmental law and public policy. The Research Council is the operating arm of the National Academy of Sciences, chartered by Congress in 1863 to advise the government on matters of science and technology.

The Haze Committee was charged to develop working principles for assessing the relative importance of anthropogenic emission sources that contribute to haze in Class I areas and for considering various alternative emissions control measures. An interim report published in 1990, *Haze in the Grand Canyon*, evaluated the National Park Service's Winter Haze Intensive Tracer Experiment (WHITEX). Our final report, *Protecting Visibility in National Parks and Wilderness Areas*, was published in 1993. The committee's work was sponsored by the U.S. Department of the Interior (National Park Service, Bureau of Reclamation, and Office of Environmental Quality), U.S. Department of Energy, U.S. Environmental Protection Agency, U.S. Department of Agriculture (Forest Service), the Arizona Salt River Project, and Chevron Corporation.

The complete design of a program for protecting and improving visibility in national parks and wilderness areas must involve many policy issues that trancend science and the committee's expertise. However, present scientific knowledge about visibility impairment has several important implications for policy makers seeking to approach the national goal of remedying and preventing man-made visibility impairment in Class I areas.

Progress toward the national visibility goal will require limits on the emissions of pollutants that can cause regional haze.

Incontrovertible scientific evidence links emissions of air pollutants to the formation of haze that limits visibility and degrades the visual environment. Almost all the effects of air pollution on visibility are caused by airborne particles. In most cases, visibility degradation is caused by five kinds of particulate substances and associated particulate water: sulfates, nitrates, organic matter, soot, and soil dust. Although some of these particles ("primary") are emitted directly into the atmosphere, others ("secondary") are formed downwind, from emitted reactive gases. Airborne particles and their gaseous precursors typically remain in the atmosphere for several days, during which time shifting winds can carry them hundreds of miles. As a result, a strategy that relies only on influencing the location of sources, although perhaps useful in some situations, would not be effective in general. The aggregate emissions of the region will have to be limited.

Progress toward the national visibility goal will require regional programs that operate over large geographic areas.

Most visibility impairment in national parks and wilderness areas results from the accumulation of primary emissions and secondary products in air transported over great distances. As a result, visibility impairment is usually a widespread problem, not a local one. That is, the problem is one of regional haze, caused by the combined effects of emissions from many sources distributed over a large area, rather than of individual plumes caused by a few sources at specific sites. Focusing only on sources immediately adjacent to Class I areas -- as under the current program -- is unlikely to improve visibility effectively. Class I areas cannot be regarded as potential islands of clean air in a polluted sea. Efforts to improve visibility in Class I areas also would benefit visibility outside these areas.

A program that focuses solely on determining the contribution of individual emission sources to visibility impairment is doomed to failure. Instead, strategies should be adopted that consider many sources simultaneously on a regional basis, although assessment of the effect of individual sources will remain important in some situations.

Because haze results from the combined emissions of many sources, it is extremely time-consuming and expensive to try to determine, one source at a time, the percentage contributed by each one. Moreover, the attainable uncertainties in the relationship of haze to source emissions increase as increasing resolution among sources is demanded.

The story of the Navajo Generating Station (NGS), a large coal-fired power

plant only 25 km from the Grand Canyon National Park (GCNP) boundary, illustrates the difficulty of quantifying individual source contributions. The WHITEX report by the National Park Service, cited during your 1990 hearings as state-of-the-art information, attributed to NGS specific levels of visibility impairment within GCNP. Based on qualitative reasoning, our committee's interim report concluded that NGS did contribute significantly to haze in GCNP at some times during the study period. Our report noted that the standard of proof required by the Clean Air Act (§169A) was only that a source emit a pollutant that "may reasonably be anticipated" to contribute to impairment of visibility in such a Class I area. However, our report rejected WHITEX' quantitative determination of the haze fraction attributable to NGS emissions, citing weaknesses in both data and data analyses. Moreover, it found no consensus on the availability of quantitative apportionment methods that might be more appropriate.

Assessing individual source contributions to haze will remain useful in some situations. For example, a regional emissions management approach to haze might be combined with a strategy to assess whether locating a new source at a particular location would have especially deleterious effects on visibility.

Visibility policy and control strategies might need to be different in the West than in the East.

Typical visibilities in the East are much lower than those in the West because of the much higher pollution levels there, exacerbated by higher humidities. The East contains a large population to enjoy the everyday benefits of any improvement in visibility in that region, while the West contains most of the nation's large national parks and wilderness areas. Many western views can be fully appreciated only when visibility is excellent, and such views are particularly vulnerable to increases in pollution levels.

In the East, sulfates derived from the SO_2 emissions of coal-fired power plants account for about one-half of all anthropogenic light extinction. Reductions in these emissions are expected to occur in the next two decades as a result of the 1990 Clean Air Act Amendments' acid rain control program. The acid rain controls alone should yield a reduction of almost one quarter in average anthropogenic light extinction.

In the West, no single source category dominates. An effective western visibility strategy will therefore have to address many source types, such as electric utilities, gasoline- and diesel-fueled vehicles, petroleum and chemical industry sources, forest-management burning, and fugitive dust. Present rapid population growth in the West is projected to continue during the coming decades, bringing with it the potential for increases in many categories of emissions.

Achieving the national visibility goal will require a substantial, long-term program.

The national visibility goal is unlikely to be achieved in a short time. The committee's simple scoping calculations indicate that the application of all commercially available control technology would reduce, but not eliminate, visibility impairment in Class I areas. Policy makers might develop a comprehensive national visibility improvement strategy as the basis for further regulatory action, and establish milestones against which progress toward the visibility goal could be measured.

A long-term commitment to establishing and financially supporting monitoring programs is essential.

Monitoring programs should be able to relate visibility impairment to its sources on a scale commensurate with regional haze events and the distribution of major emissions sources. Monitoring networks in the East need to be expanded to track visibility improvements associated with reductions in SO_2 emissions. Future measurement programs should devote increased attention to quality assurance and control. A consensus should be developed on the specific instrumentation to be used for monitoring light extinction. Greater attention should be given to the implications of planned changes in airport visibility monitoring for research on visibility impairment. The committee recommended using high-sensitivity integrating nephelometry for routine visibility monitoring.

Current scientific knowledge is adequate and control technologies are available for taking regulatory action to improve and protect visibility. However, continued national progress toward this goal will require a greater commitment toward atmospheric research, monitoring, and emissions control research and development.

If the nation chooses to act to improve visibility, it can do so now within a rational decision framework. Visibility impairment is probably better understood and more easily measured than any other air-pollution effect. The relationship of visibility impairment to atmospheric composition is understood at a fundamental level. The major constituents of regional haze are known, as are some important categories of emissions sources. This knowledge base can be used to inform judgements about the likely effects of possible initial steps.

There remain gaps and uncertainties in our knowledge. As noted above, the road to the national goal of no manmade impairment is a long one, and we cannot now see the way to the end. Additional atmospheric research, monitoring, and emissions control R&D will be necessary to sustain cost-

effective progress. Because visibility impairment is completely reversible and more easily monitored than most pollutant effects, it may be suited to a program incorporating feedback from trial and observation. The need for additional research does not imply that further regulatory action, if otherwise warranted, to improve visibility in Class I areas would be premature.

The committee felt that the slowness of progress to date has been due largely to a lack of commitment to an adequate government effort to protect and improve visibility and to sponsor the research and monitoring needed to better characterize the nature and origin of haze in various areas. The federal government has accorded the national visibility goal less priority than other clean-air objectives. Even to the extent that Congress has acted, EPA, the Department of Interior, and the Department of Agriculture have been slow to carry out their regulatory responsibilities or to seek resources for research.

Although the causes of visibility impairment are reasonably well understood, additional research is still necessary in some areas. Visibility research would benefit from increased integration with other air-quality research, and from wider participation by the scientific community. The committee recommended establishing an independent science advisory panel with EPA sponsorship to help guide the research elements of the national visibility program. I think the committee would have been encouraged by the recent efforts of the Committee on Environment and Natural Resources at interagency coordination.

Visibility impairment can be attributed to emission sources on a regional scale through the use of several kinds of models.

After identifying which pollutants are impairing visibility in a given region, it is useful to apportion these pollutants among contributing sources to the extent possible so that the relative effectiveness of alternative control measures can be evaluated. No single source-apportionment method is necessarily best for all visibility problems, and the committee's recommendations in this area lean heavily on hybridization of complementary approaches. In general, the best approach for evaluating emission sources is a nested progression from simpler and more direct models to more complex and detailed methods. Simpler methods are most effective in the early stages of source apportionment, with the more complex methods being applied, if necessary, to resolve difficult technical issues. The simpler models are available today and could be used as the basis for designing regional visibility programs; the more complex models could be used to refine those programs over time. As a vehicle to illustrate issues that arise in any apportionment, the committee's final report demonstrated the use of a simple model, speciated rollback, to apportion spatially and temporally averaged

anthropogenic light extinction among source types.

Reducing emissions for visibility improvement could help alleviate other air-quality problems, just as other types of air-quality improvements could help visibility.

Emissions that contribute to regional haze also contribute to a variety of other undesireable effects on the environment and human health. SO_2 and NO_x are precursors of acid deposition. NO_x and VOCs are precursors of ground-level ozone. Fine particles are a respiratory hazard, and can influence climate by interacting with incoming solar radiation and by modifying cloud formation. Policy makers should consider the linkages between visibility and other air-quality problems when designing and assessing control strategies.

In summary, any effective visibility protection program must be aimed at preventing and reducing regional haze. An effective program must, therefore, control a broad array of sources over a large geographic area. Such a program would mark a considerable break from the present approach of focusing on visible plumes from nearby sources and of attempting to determine the effects of individual sources on visibility impairment.

Although visibility impairment is as well understood as any other air pollution effect, gaps in knowledge remain. Filling these gaps will require an increased national commitment to visibility protection research. With major shifts projected in present patterns of pollutant emissions, the committee believes that the time has come for Congress, EPA, and the states to decide whether to make that commitment.

Mr. SYNAR. Thank you, Professor White. That was excellent testimony.

Let's begin with you, Ms. Steinhardt, if we could. We are going to talk about a lot of acronyms and technical terms here. Why don't we start with prevention of significant deterioration, what we will call PSD.

Where does PSD apply?

Ms. STEINHARDT. It applies to those parts of the country that have already clean air areas, and it sets up a special class of protection for the 158 national parks and wilderness areas, the class I areas.

Mr. SYNAR. What is meant by best available control technology or BACT?

Ms. STEINHARDT. This means that sources have to install the best control technology available, taking costs and energy use and a number of other factors into account.

Mr. SYNAR. Now, under section 165 of the Clean Air Act, isn't EPA supposed to notify Federal officials in charge of the 158 class I areas of potential air pollution sources that may affect them?

Ms. STEINHARDT. Yes, they are.

Mr. SYNAR. Now, that is an affirmative responsibility of Federal officials who manage those parks. What are the air quality related values?

Ms. STEINHARDT. Visibility is one of them, but it also includes aquatic resources and vegetation, wildlife and so on, other natural resources.

Mr. SYNAR. What happens once that notice is given to land managers?

Ms. STEINHARDT. They have to make comments on a permit application to the State that will issue the permit.

Mr. SYNAR. Now, I understand that if the Federal land manager demonstrates to the State that the proposed new facility would have an adverse impact on air quality values, including visibility, or would cause a violation of the pollution increment, the permit shall not be issued; is that correct?

Ms. STEINHARDT. Yes, it is.

Mr. SYNAR. So receiving the notice on a timely basis is the key first step to ensuring that Federal land managers have the opportunity to comment on the proposed permit, right?

Ms. STEINHARDT. Yes, that is right.

Mr. SYNAR. Now, GAO's 1990 report to this subcommittee, "Air Pollution: Protecting Parks and Wilderness From Nearby Sources of Pollution," identified some serious breakdowns in the PSD program. For example, you cite EPA's failure to forward new source permit applications to Federal land managers in the Departments of Interior and Agriculture so that the permits could be reviewed for the impact on these class I areas. Have those notice problems been corrected?

Ms. STEINHARDT. Yes, we understand they have, but we also understand that the Park Service still has some concerns about the fact that they are receiving or under EPA guidelines are required to receive only those applications from within a 60-mile radius of the class I area, and they would like at times to see some applications for facilities from further away.

Mr. SYNAR. Has EPA come up with a way to capture more of the sources that affect those class I areas? Have they found a way to do that yet?

Ms. STEINHARDT. Not yet, no.

Mr. SYNAR. OK.

Have they got a task force or anybody looking at it?

Ms. STEINHARDT. Oh, I am sorry. Yes, they do. I should give them credit where credit is due.

Mr. SYNAR. All right.

Now, your testimony points out that the PSD program has had some success in reducing the rate of pollution increase near class I areas by giving, as we said, those Federal land managers a way to negotiate down the emissions during the permit review process. In reviewing this program with us, you studied 13 permit applications for sources near Shenandoah National Park.

How much reduction did you find over what would have happened without the program?

Ms. STEINHARDT. A fairly sizable one, about 40 percent reduction. They went down to—I think the total was 55,000 or so in the original applications, and they negotiated a reduction down to about 30,000 tons.

Mr. SYNAR. 30,000 tons?

Ms. STEINHARDT. Yes.

Mr. SYNAR. What happens when the land manager finds that a new plant that would adversely affect him? What does he do?

Ms. STEINHARDT. They are supposed to make a formal adverse impact determination and recommend to the State that they deny the permit application.

Mr. SYNAR. So what happens if the State disagrees with the land manager?

Ms. STEINHARDT. Well, the land manager or an outside group can appeal, but if the State wants to process and approve the application, they can.

Mr. SYNAR. Have there been a lot of appeals of these State actions?

Ms. STEINHARDT. There haven't been very many adverse impact determinations. And I should point out, in fact, Mr. Chairman, that the first one that the Park Service ever made was 6 months after your hearing 4 years ago on this program, and since then there have been a few, all pertaining to permit applications around Shenandoah National Park where visibility clearly is a problem, but the State has gone ahead and issued those permits.

Mr. SYNAR. So what we are saying here is that the land manager has to demonstrate to the satisfaction of the State that there is a problem, but basically the State is in control to make the final decision of whether or not to protect each Federal area; correct?

Ms. STEINHARDT. Yes, and it is clearly a problem with the program, yes.

Mr. SYNAR. We discussed how the PSD program governs new air pollution sources which want to be located near the class I area. What programs deal with controlling of existing sources?

Ms. STEINHARDT. Well, the major provision for dealing with existing sources is the best available retrofit technology authority, which I mentioned in my testimony. The 1977 amendments also

provided authority for EPA to issue regional haze regulations under which both existing sources and new sources could be controlled.

Mr. SYNAR. Well, given the fact that we have a large number of facilities that are exempt from PSD and the cost and the delay that are associated with BART, are you saying that we should give up trying to control sources under the PSD program?

Ms. STEINHARDT. No, really not at all. I think these sources are still significant contributors to air pollution, and sometimes, in fact, I think the Park Service has found that they may be the primary contributors, but the problem has been in trying to deal with the sources one by one. I think overall we can only be successful if we deal with these sources on a regional basis.

Mr. SYNAR. In 1980 EPA divided the visibility program into two phases. They issued the BART as the first phase and the second phase, regional haze, has never been issued. I raised that in the 1990 hearing, and it is still true today. Why is that?

Ms. STEINHARDT. EPA tells us they don't have the information they feel they need to develop the regional haze regulations, and they also say they want to wait for the report of the Grand Canyon Visibility Transport Commission.

Mr. SYNAR. Are there any other programs out there that are effective in trying to do this at all?

Ms. STEINHARDT. No.

Mr. SYNAR. So without the regional haze regulations, our success rate is not likely to increase, is it?

Ms. STEINHARDT. That is right.

Mr. SYNAR. Now the best available retrofit program deals with pollution which is reasonably attributable to one or a few relatively nearby sources; is that not correct?

Ms. STEINHARDT. Yes.

Mr. SYNAR. How many actions have there been in that area?

Ms. STEINHARDT. These BART actions?

Mr. SYNAR. Right.

Ms. STEINHARDT. There was one that the Park Service undertook, EPA and the Park Service undertook, for the Grand Canyon, and we understand now that the Forest Service has initiated a process for Mt. Zirkel Wilderness Area in Colorado.

Mr. SYNAR. So one from the Park Service and one from the Forest Service; right?

Ms. STEINHARDT. Right, and there haven't been any others, as far as we know.

Mr. SYNAR. So in terms of using BART to protect the parks and wilderness there has been almost no progress since our last hearing; has there?

Why haven't the land managers and EPA used their authority to impose at least specific controls on existing dirty sources which cause much of our visibility problem?

Ms. STEINHARDT. Well, they feel it is a very costly and time consuming way to try to deal with the problem. They spent about 10 years and $5 million to do the studies for the Grand Canyon BART action.

Mr. SYNAR. At the last hearing, I stated that I thought the law did not require the kinds of extremely detailed and expensive stud-

ies that the State and Federal agencies thought were required to make a BART case. In fact, the cost of just one of those tracer studies is almost the same as the Park Service's entire air quality budget.

Ms. STEINHARDT. It is more than their budget request for 1995.

Mr. SYNAR. Case made.

I think that the Ninth Circuit Court of Appeals agrees with my view and we are going to explore that in some later panels. EPA has blamed the lack of data for its failure to issue these regional haze regulations, but isn't it true that the agency and the Park Service are actually reducing their expenditures that might help yield that data and that although the 1990 Clean Air Amendments contemplate an increase in expenditures and efforts, that the numbers are still going down? Am I correct, that EPA has eliminated atmospheric research for the 1995 budget request all together?

Ms. STEINHARDT. Yes. Well, it has eliminated the atmospheric research directly related to visibility, yes.

Mr. SYNAR. This was the research that was going to be helpful in writing the haze regulations; right?

Ms. STEINHARDT. Yes, that is true.

Mr. SYNAR. At the same time, it is my understanding the Park Service has reduced its air quality monitors by 40 percent since the 1990 hearings, and that the data from those monitors would have also been helpful with the regional haze regulations; is that correct?

Ms. STEINHARDT. Yes, it is.

Mr. SYNAR. Finally, EPA has stated that they wanted to wait for the results, as you say, from the Grand Canyon Visibility Transport Commission before proceeding. Will the commission's finding be appropriate for the whole country? I mean, is this such a landmark that we have to wait?

Ms. STEINHARDT. No, it doesn't seem that it would be appropriate for the whole country.

Mr. SYNAR. Is there any reason why EPA should wait for additional information before the issuing of the regional haze regulations?

Ms. STEINHARDT. Well, we are convinced by the National Research Council and the Park Service that the information is available now and they should go ahead with it.

Mr. SYNAR. I agree with you. In fact, since our last hearing 4 years ago, it appears to this subcommittee that clean air for America's crown jewels remain a very low priority and what really disturbs us is the budget cuts that we are seeing proposed.

Ms. Steinhardt, we have those three pictures right there from you——

Ms. STEINHARDT. Yes.

Mr. SYNAR [continuing]. Pictures on excellent, average, and poor days in Shenandoah. Tell us about those three, would you?

Ms. STEINHARDT. Yes. The picture in the center shows I think what a visitor to Shenandoah National Park might encounter most times during the year, about 250 days, let's say, somewhat hazy.

To the right, the picture showing excellent visibility is what a visitor might encounter, say, 30 to 50 days during the year, probably during the winter when there aren't very many visitors. And

the picture on the left shows what a visitor on another 30 to 50 days of the year might encounter, probably during the summer when most visitors are there.

Mr. SYNAR. Let me ask you this: Isn't it true that the Park Service has detected some air quality problems in almost every park?

Ms. STEINHARDT. Yes, it is.

Mr. SYNAR. Professor White, I understand that today you will be speaking, and that you spoke, from your findings contained in the protecting visibility in national parks and wilderness areas, which is a report which was issued by the committee on haze in national parks and wilderness areas from the National Academy of Sciences National Research Council.

I want to start with a quote from that report.

The slowness of progress to date is due largely to a lack of commitment to an adequate government effort to protect and improve visibility and to sponsor the research and monitoring needed to better characterize the nature and origin of the haze in various areas. The Federal government has accorded the national visibility goal less priority than other clean air objectives. Even to the extent that Congress has acted, EPA, the Department of Interior, and the Department of Agriculture have been slow to carry out the regulatory responsibilities or to seek resources for research.

That quote pretty well sums up the problem.

First, let me ask you this: What do we mean when we talk about visibility impairment?

Mr. WHITE. We mean loss of blue skies, we mean loss of distant views, we mean the degraded view of things we can still see, loss of color in the scene, general deterioration of our ability to enjoy our surroundings.

Mr. SYNAR. Now, the pollutants that impair this visibility are different in the East and the West of the United States; is that not correct?

Mr. WHITE. They are a different mix, yes. In the East, they are dominated by sulfates that are formed by sulfur dioxide emissions. In the West, they are a more heterogeneous mix of sulfates and organic material from fires, vegetative burning, motor vehicle emissions, soot from diesel engines, and dust from human activities.

Mr. SYNAR. So in the West, we need to look at more than just power plants; correct?

Mr. WHITE. That is correct.

Mr. SYNAR. All right.

Since that report endorsed using different strategies in the East and West based upon different emission patterns and different air quality, do you think the strategies worked out by the group, such as the one we have been talking about here, the Grand Canyon Visibility Transport Commission, is appropriate for the East?

Mr. WHITE. No, certainly not the technical part of it. The focus on the large scale, though, is appropriate for the East, the multistate interstate coordination.

Mr. SYNAR. Your report states, "Emission control measures already adopted or planned will not solve the Nation's visibility problems." What would be the effect of applying all the commercially available controls in the regions studied by your model?

Mr. WHITE. You would have some improvement, but you would still have substantial man-made visibility impairment.

Mr. SYNAR. So even if we applied all the controls commercially available, we would still have visibility problems?

Mr. WHITE. That is right.

Mr. SYNAR. Professor White, you are an expert in tracing emissions back to their sources. Given the complexity of that task, including the large number of potential sources which may affect visibility, is tracing specific emissions back to their sources a useful way to regulate threats to visibility?

Mr. WHITE. I think it is a very, very difficult way to go about it, and the experience with the Grand Canyon and the regulation of the Navajo Generating Station provides a good example. That is a large plant just 25 kilometers from the park boundary.

Mr. SYNAR. What about revising the national ambient air quality standards for particulate matter to focus on small size particles? What is the feasibility of this approach to try to improve visibility?

Mr. WHITE. That is certainly worth consideration. It would be a secondary standard for fine particles because visibility degradation is predominantly due to fine particles. One concern is that the standard that would protect visibility in the West might be too strict to be at all achievable in the East and conversely that if you set a standard in the East that could be met by reducing anthropogenic emissions, it would not protect visibility in the West.

Mr. SYNAR. What is the cost of that strategy, do you have any idea?

Mr. WHITE. No.

Mr. SYNAR. Your report and testimony conclude that current scientific knowledge is adequate—and control technologies are available—for taking regulatory action now to improve this visibility. You recommend, I think, actions based on the use of a series of increasingly sophisticated models to access the contribution of sources or groups of sources.

How would those models help support the new regulations?

Mr. WHITE. The models would help identify the types of sources that should receive the most attention, the most initial attention, and they could also identify regions that should receive attention.

Mr. SYNAR. What about the more sophisticated hybrid models, are they available?

Mr. WHITE. The elements of those models are available, and with the commitment to building them they could be put together in the next—in the near term future.

Mr. SYNAR. Professor, you heard a couple minutes ago that EPA has not requested funds for atmospheric research for fiscal year 1995. What do you view as the most important types of research that will not be funded or will be discontinued because of that budget request?

Mr. WHITE. Well, certainly monitoring is an important priority. We are embarked on substantial experiments in reducing emissions across a large area in the East and reducing emissions at the Navajo Generating Station near Grand Canyon.

It would be a real waste and shame to pass up the opportunity to track the effects of these emissions reductions in the atmosphere.

Another area that EPA should really be taking the lead on is just providing a focus for reaching a consensus on how to monitor visibility and track it.

Mr. SYNAR. Well, the Park Service is the primary agency for that monitoring, but you also heard a couple minutes ago they are cutting back, so that is going to hurt us, too, isn't it?

Mr. WHITE. Yes.

Mr. SYNAR. Now your report also stresses that the fight for better air quality in parks and wildernesses needs to be done over a long period and that you say that the end is nowhere in sight, no pun intended. What should the strategy be to be effective?

Mr. WHITE. Well, we would suggest setting an approach that aims at continuing to decrease emissions and to track progress toward the visibility goal over the course of the years.

Mr. SYNAR. We need the regional haze regulations, don't we?

Mr. WHITE. That is right, yes.

Mr. SYNAR. In your working with this, have you seen any Federal commitment that you would be proud of?

Mr. WHITE. No, sir. No.

Mr. SYNAR. Well, Professor, let me thank you for coming. I think your efforts and your help on this very important subject was vital today, and I know you had to come in from St. Louis. We appreciate it.

Ms. Steinhardt, Mr. McGee, we also appreciate the outstanding work from the GAO, and we appreciate all three of you being here this morning. I think it has really set the tone for what we are trying to accomplish today.

Thank you very much.

Mr. WHITE. Thank you. We appreciate your interest.

Mr. SYNAR. We will be here forever, it seems, on this subject.

Mr. SYNAR. Our next panel is Mr. David W. Carr, Southern Environmental Law Center, Charlottesville, VA; Christine Shaver, Environmental Defense Fund, Boulder, CO; Mr. John T. Leary and James M. Souby, from the Grand Canyon Visibility Transport Commission; Patrick J. Michaels, associate professor, State climatologist, University of Virginia.

We have accompanying Mr. Leary are Roger Clark, conservation director, Grand Canyon Trust, Flagstaff, AZ, and Sean B. Kendall, Phelps Dodge Corp., Flagstaff, accompanying Patrick Michaels is Greg Clayton from the Regional Air Office of Fredericksburg, VA.

As you saw from the last panel, we swear in all our witnesses. Do any of you have any objection to being sworn?

Anyone who may be called upon to answer questions stand and take the oath.

[Witnesses sworn.]

Mr. SYNAR. Welcome this morning.

What we would like to do is hear from all four of you, so I would ask you to take 20 minutes total. Your entire testimony will be made a part of the record.

STATEMENT OF DAVID W. CARR, JR., DIRECTOR, PUBLIC LANDS PROJECT, SOUTHERN ENVIRONMENTAL LAW CENTER, CHARLOTTESVILLE, VA

Mr. CARR. Thank you, Mr. Chairman, and thank you for the opportunity to be here today.

The Southern Environmental Law Center is a nonprofit public interest organization dedicated to protecting the special natural resources of the South, including the Shenandoah National Park and Great Smoky Mountains National Park. Shenandoah and the Smokies are two of the most polluted national parks in the country.

At present, the park protection provisions of the Clean Air Act are failing miserably to achieve their purpose of preserving, protecting, and enhancing the air quality of national parks. Furthermore, the Clean Air Act amendments of 1990, which do not specifically address class I area protection will not adequately protect the serious problems we have at Shenandoah and the Smokies.

Scientists at the University of Virginia who are experts on acid deposition and its effects on aquatic resources tell us that even under the best of 1990 amendment reductions scenarios, the SO_2 reductions will not reverse the acidification trend in the sensitive mountain headwater streams in Shenandoah.

The situation regarding nitrogen oxides emissions is even more troubling. EPA reported that NO_x emissions in the region will begin increasing after the year 2000. EPA also reported that by the year 2010, 65 percent of NO_x emissions will come from industry and utilities.

We already have ozone levels in the parks reaching the ambient human health standard, and vegetation is adversely impacted well below that level. There is now general scientific consensus that NO_x emissions are a major factor in ozone formation in rural areas like Shenandoah and the Smokies. Given these circumstances, it is imperative that the National Park Service and EPA aggressively carry out their authorities and responsibilities to protect class I areas. It is also incumbent upon EPA to use all its existing authority to move forward to solve the serious problem.

The Southern Appalachian Mountain initiative was begun roughly 2 years ago. It is often referred to as SAMI. I do not believe that SAMI is likely to be successful in improving air quality unless EPA takes an aggressive leadership role and uses its existing authority to provide SAMI with the tools to reduce air pollution.

I fear that SAMI will continue to be used as a reason for delay by EPA and others. Thus far, the SAMI process has been extremely slow. Since its inception nearly 2 years ago, SAMI has only discussed the process and procedures for the operation of SAMI.

EPA should establish a deadline for SAMI to produce recommendations no later than the end of 1995. During that time period, the EPA should develop and implement tools that SAMI can use to address the problem.

First, EPA should develop an effective regional program that will substantially reduce overall NO_x emissions in the East, a cap approach would be the most effective.

Second, EPA should proceed to develop regional haze regulations by the end of 1995.

Just briefly on what happened in Virginia in the early 1990's. The Park Service after your hearing in 1990, finally took action to rescue, to try to rescue, Shenandoah from the disastrous impacts of air pollution.

Unfortunately, the PSD process has been rife with political interference at that time from Bush administration political appointees. In the case of the Old Dominion Electric Cooperative Plant, the Park Service was considering an appeal of the permit in the spring of 1991.

However, pressure from the utility industry and the applicants persuaded the Secretary of the Interior and his staff to direct the Park Service not to appeal the permit. When NPS failed to protect Shenandoah from the proposed ODEC plant, we appealed the State-issued air permit seeking EPA's help.

EPA had the opportunity at that time to reduce the NO_x emissions from Clover, the ODEC plant, by 8,000 tons per year. The ODEC opinion failed to do that, and also let stand Virginia's policy of not looking at the impact on the park of new sources located more than 100 kilometers away.

This leaves the Park Service in the untenable position of having the burden to quantify an adverse impact on the park but not having any applicant-provided modeling to indicate the level of emissions that will reach the park. EPA needs to issue guidance that will force States to require increment modeling from all PSD sources within 200 kilometers of the class I areas and large sources even beyond 200 kilometers.

I would note, and it is covered in my written testimony, that the Park Service was also prohibited as was the Forest Service from filing an appeal of the Hadson-Buena Vista permit. We did file a permit appeal that we carried forward.

Finally, where we are is that EPA is going to have to take the lead on these issues and cannot rely on regional voluntary commissions. EPA needs to provide these commissions the tools to in fact reduce emissions.

Thank you.

Mr. SYNAR. Thank you, Mr. Carr.

[The prepared statement of Mr. Carr follows:]

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Testimony of David W. Carr, Jr.
Director, Public Lands Project
Southern Environmental Law Center
Charlottesville, Virginia

House Subcommittee on Environment,
Energy and Natural Resources of
the House Committee on Government Operations

April 29, 1994

The Southern Environmental Law Center (SELC) is a non-profit public interest environmental organization dedicated to protecting the special natural resources of the South such as the Shenandoah and Great Smoky Mountains National Parks. As director of SELC's public lands project, I have been involved in an effort to limit and clean up air pollution in those two parks for the past four years. These parks host roughly 10 million visitors every year.

The purpose of the national parks as set forth in the 1916 Organic Act "is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." 16 U.S.C. § 1 (emphasis added). The Shenandoah National Park has the highest sulfur pollution of any park in the country, leading to drastic visibility impairment, acidification of streams and damage to vegetation. Great Smoky Mountains National Park has the highest monitored nitrogen loading of any national park in the country and those pollutants are leading to harmful levels of ozone and adverse impacts to vegetation and aquatic resources. In short, we have two of the most polluted national parks in the country in our region. At present, the park protection provisions of the Clean Air Act are failing miserably to achieve their purpose of preserving, protecting, and enhancing the air quality in national parks. Clean Air Act § 160.

Furthermore, the Clean Air Act Amendments of 1990 (CAAA), which do not specifically address Class I area protection, will not adequately correct the serious pollution problems we have at

Shenandoah and the Smokies. Scientists at the University of Virginia who are experts on acid deposition and its effects on aquatic resources, tell us that even under the best of 1990 Amendment reduction scenarios, the SO_2 reductions will not reverse the acidification trend in the sensitive mountain headwater streams in the Shenandoah National Park. See testimony of James N. Galloway, Professor, Environmental Sciences Department, University of Virginia, to the House Subcommittee on National Parks and Public Lands dated Thursday, April 30, 1992, Attachment 1. Furthermore, it is likely that some southern utilities will buy allowances rather than reduce their SO_2 emissions thereby continuing to pollute at or close to current levels. For example, Carolina Power & Light which operates coal-fired plants due south of Shenandoah and roughly 200 kilometers away, has purchased 85,000 tons per year of allowances that would allow them to continue to run these dirty facilities.

The situation regarding nitrogen oxides (NO_x) emissions is even more troubling. In a study done for EPA in 1991, Pechan and Associates projects that NO_x emissions in Virginia will increase significantly by the year 2010 despite the Clean Air Act Amendment's provisions. Furthermore, EPA reported at the November 15, 1993 meeting of the Southern Appalachian Mountain Initiative that its projections show that NO_x emissions in the region will begin increasing after the year 2000. EPA also reported that by the year 2010, 65 percent of NO_x emissions will come from industry and utilities. EPA also noted that while the CAAA require less than a 10 percent cut in NO_x by the year 2000, Germany is proposing to reduce SO_2 and NO_x by 90 percent by the year 2000.

We already have ozone levels in the parks reaching the ambient human health standard and vegetation is adversely impacted well below that level. There is now general scientific consensus that NO_x emissions are a major factor in ozone formation in rural areas like the Shenandoah or Great Smoky Mountains parks. Moreover, there are serious concerns whether the ambient health standard for ozone adequately protects human health.

Given these circumstances, it is imperative that the National Park Service and EPA aggressively carry out their authorities and responsibilities to protect Class I areas provided for in Section 165 of the Clean Air Act. It is also incumbent upon EPA to use all of its existing authority to move forward to solve this serious problem. Furthermore, it is important that this subcommittee and Congress as a whole seriously consider new legislation that would require the reductions in NO_x, SO_2 and other pollutants, necessary to remedy adverse impacts in Class I areas.

As the following answers to the specific questions set forth in the Chairman's April 22, 1994 letter further demonstrate, the PSD program has not been successful in protecting Class I areas from new sources and more aggressive approaches for cleaning up existing sources are necessary to remedy adverse impacts at Class I areas.

(1) Describe the Clean Air Act Prevention of Significant Deterioration (PSD) permit actions you have been involved with, including any comments on permit applications and appeals of state permit decisions.

In 1990, the National Park Service finally took action to rescue the Shenandoah National Park from the disastrous impacts of air pollution. The Deputy Assistant Secretary of the Interior, as the federal land manager, issued a finding of adverse impact under Section 165(d) maintaining that 15 new power plants would have adverse impacts on the Shenandoah National Park. SELC, along with 10 other national, state and local environmental groups, supported the NPS effort. Unfortunately, the PSD process has been rife with political interference from Bush Administration political appointees. If the environmental community had not been there to carry the ball when the Secretary of Interior's office forced the NPS to drop the ball, the PSD program would be in much worse shape than it is now.

The ODEC Case

Since 1990, SELC and the Shenandoah Air Coalition that it represents has filed comments on seven PSD permit applications for new power plants and appealed three of those permits to EPA. The three cases appealed clearly demonstrate the political interference to which the process is subject. In the case of Old Dominion Electric Cooperative (ODEC), a coal-fired 786 megawatt plant proposed for Clover, Virginia, the National Park Service was considering an appeal of the permit in the spring of 1991. However, pressure from the utility industry and the applicants persuaded the Secretary of the Interior and his staff to direct the NPS not to appeal the permit. With their bargaining power gone, NPS settled for a half-baked offset proposal. See Attachment 2 for a more detailed discussion of the political interference in the ODEC case: Statement of David W. Carr, Jr. before the Subcommittee on National Parks and Public Lands, April 30, 1992.

When NPS failed to protect Shenandoah from the proposed ODEC plant, SELC appealed the state-issued air permit to EPA on June 3, 1993, seeking EPA's help to protect the park. However, not unexpectedly, EPA's decisions were subject to the same political interference that NPS encountered.

EPA Region III of Philadelphia recommended that the Clover plant be required to clean up its NO_x emissions using technology, selective catalytic reduction, that was available in 1991 and has now been required in permits for a base load coal plant in Florida and several cogeneration plants in Virginia and New Jersey. EPA had the opportunity to reduce the NO_x emissions from Clover by 8,000 tons per year, thus sending the message that new plants would have to install best available control technology. Instead, EPA bowed to political pressure and issued an opinion that damaged, rather than enhanced, NPS's ability to protect the parks.

The ODEC opinion, issued January 29, 1992, let stand Virginia's policy of not looking at the impact on the park of new sources located more than 100 kilometers away. The decision then requires that NPS quantify the impact of the proposed source on the air quality-related values of the park. The opinion undercuts Section 165 of the Act. The law requires that the applicant demonstrate that the proposed new source will not contribute to a violation of the Class I increment. If the applicant makes such demonstration, then the burden is on NPS to demonstrate that the plant would contribute to an adverse impact. Under the ODEC decision, if a proposed plant is more than 100 kilometers from the park, the applicant does not have to undertake increment modeling to demonstrate that it does not contribute to a violation of the increment. NPS is left in the untenable position of having the burden to quantify an adverse impact on the Park, but not having any applicant-provided modeling to indicate the level of emissions that will reach the park.

If NPS must quantify the amount of pollution adversely impacting the resource from a particular new source, EPA must either provide the tools to make this demonstration, or require applicants to develop the tools to assess the impact of sources beyond 100 kilometers. An interagency working group has now developed a model that clearly allows assessment of the impact of sources beyond 100 kilometers. EPA has issued guidance indicating that states should look at large sources beyond 100 kilometers. However, EPA needs to issue stronger guidance that will force states to require increment modeling from all PSD sources within 200 kilometers of the Class I areas.

A muzzle is placed on the Park Service PSD efforts in 1992

In 1992, it became apparent that the Secretary of Interior's office had placed a tight muzzle on the Park Service's efforts to protect Shenandoah and the Great Smoky Mountains National Park.

Until April 1992, the Park Service had either submitted extensive comments or negotiated an offset agreement on each of the power plant permits that had come up for public comment in

Virginia. The Park Service prepared comments for the April 16, 1992 hearing on the Bear Island permit. However, NPS was not allowed to release these comments due to direction from higher officials in the Department of the Interior. In addition, NPS stated in its March 11, 1992 comments on the Tennessee Eastman permit, wherein it contended that the emissions from the plant would adversely impact the Great Smoky Mountains National Park, that it would submit detailed technical comments under separate cover. We understand that the NPS had prepared those technical comments but the Secretary's office did not allow those comments to be submitted for the record, nor was the permit challenged by NPS.

The Hadson-Buena Vista Case

The most blatant example of the Secretary's office forbidding action to protect the parks occurred in the case of the Hadson-Buena Vista power plant proposal. This proposed coal-fired plant near Lexington, Virginia would have been located only 15 kilometers from the Class I James River Face Wilderness on the Blue Ridge Parkway and only 56 kilometers (35 miles) from Shenandoah. Both the Park Service and U.S. Forest Service (which administers the wilderness area) objected to the permit being issued without full offsets of the plant's emissions. The Park Service and the Forest Service spent several years collecting information and documenting the potential impacts of this proposed plants. Over their objections, the state issued the permit on April 8, 1992.

The Park Service and Forest Service both sought to appeal the permit to EPA. The Park Service and the Assistant Secretary of Interior for Parks even drafted an appeal document setting forth the basis for an appeal. The Assistant Secretary stated in a memo that "I believe that the VDAPC's decision to issue this permit was based on an erroneous interpretation of Clean Air Act requirements which, if allowed to stand, would have the effect of making it very difficult for me to carry out my role and responsibility as federal land manager (FLM) under the Act." See Attachment 3 - Documents relating to political interference in federal land managers' attempts to appeal Hadson-Buena Vista permit: Document C, memo from Assistant Secretary of Fish, Wildlife and Parks to Assistant Secretary of Policy, Management and Budget.

Both the Assistant Secretary for Parks and the park superintendent requested approval to file an appeal of the Hadson permit. See Attachment 3, Document D, memo from Superintendent of Shenandoah to Regional Director, Mid-Atlantic Region, May 15, 1992. The approval to file the appeal was refused and both the superintendent and Assistant Secretary for Parks were told by their superiors not to file the petitions for review. See memo from Superintendent to files dated May 19, 1992, Attachment 3,

Document E and memo from Assistant Chief of Air Quality Division to Associate Director of Natural Resources, May 21, 1992, Attachment 3, Document B at 2 and attachment C thereto. In response to a Freedom of Information Act Request, we received extensive documentation setting forth why the Park Service and Forest Service should appeal the Hadson permit. However, we received virtually no documentation supporting a decision not to appeal. The only document received was an informal response to the press which stated, "The National Park Service has appealed similar state decisions in the past and has been overturned by EPA." Unfortunately, that statement is categorically wrong. The only permit the Park Service ever appealed (Multitrade) was settled and EPA issued no decision.

The Forest Service supervisor and Regional Forester also sought to appeal the permit due to the plant's impacts on the wilderness area. The Forest Service had calculated that this plant alone would increase acid deposition at the wilderness area by 2 or 3 percent. Streams at the wilderness area are already suffering acid levels below a pH of 6.0. The Forest Service prepared lengthy documents supporting the filing of an appeal. See Attachment 3, Document F. Based on a review of the documents provided by the Forest Service and the events that occurred, it is our understanding that political appointees in the Department of Agriculture prohibited the Forest Service from filing a petition for review.

The Southern Environmental Law Center, however, on behalf of a coalition of environmental groups, did file an appeal of the Hadson-Buena Vista permit on May 13. Fortunately, that appeal was successful and the permit was remanded to the state of Virginia to fully reconsider the findings of adverse impact made by the Forest Service and Park Service. We believe that one of the reasons the appeal was successful, was that EPA had restructured its appeal review process so that decisions were rendered by an environmental appeals board, rather than the Administrator. Hopefully, this has better insulated the decisionmakers from interference from political appointees above them. As a result of our victory in the appeal, the applicant has withdrawn the application and announced the plant will not be pursued.

The Hadson decision is helpful in that it makes clear that a state must consider the merits of a specific quantified adverse impact determination by a federal land manager. However, the Hadson decision does not correct Virginia's faulty policy of not requiring sources beyond 100 kilometers to be considered in the increment analysis. The appeals board found that the Virginia policy of excluding sources beyond 100 kilometers did not contravene current agency policy, but reiterated the Administrator's suggestion in the ODEC decision that Virginia re-examine its current policy. It also urged EPA to move

expeditiously to issue final guidance on this issue. Hadson decision at 15.

While EPA's Director of the Office of Air Quality Planning and Standards issued a memorandum on October 19, 1992 indicating that large sources beyond 100 kilometers need to be considered when such impacts reasonably could affect the outcome of the Class I analysis, EPA needs to go further and make clear that all major sources within 200 kilometers of Class I areas and large sources beyond 200 kilometers should at least be screened with regard to whether they contribute to Class I increment consumption and whether they can contribute to adverse impacts on air quality-related values. The Interagency Working Group on Air Quality Modeling has recommended the use of models that can routinely be used for calculating impacts from sources at distances of 200 kilometers, and can be applied to mega-sources locating beyond 200 kilometers from Class I areas.

The Hadson decision also briefly addressed the issue of offsetting new PSD emissions with reductions of emissions from existing sources. While EPA noted that offsets are not specifically required by law, they are a means to alleviate an adverse impact, thus allowing the permit to issue. Through the PSD process in Virginia, applicants have offered offsets in an attempt to resolve the federal land managers' concerns. Unfortunately, there are no rules for assessing the validity of these offsets and whether they in fact offset the adverse impact. We believe that EPA should adopt an offset policy that will allow new sources to replace existing dirtier sources and ensure that the reductions in existing emissions will offset the contribution of the new source to adverse impacts at the Class I area.

(2) What do you view as the positive impact of the PSD program?

The efforts of the National Park Service, U.S. Forest Service and the environmental community in the PSD program in Virginia have yielded some positive results, but they are not sufficient to protect and remedy the existing adverse impacts at the Class I areas in the Southern Appalachians. The first positive impact of the PSD process in Virginia has been the tighter pollution controls required on new coal-burning facilities in the state. The Virginia Department of Air Pollution Control required selective catalytic reduction on the Cogentrix of Dinwiddie permit, the Hadson-Buena Vista permit and most recently, the SEI-Birchwood plant just east of Fredericksburg, Virginia. SEI-Birchwood is a 220 megawatt coal-fired plant that has received a PSD permit that will require a NO_x design rate of .1 lbmm/btu with a maximum emission limit of .15 lbmm/btu.

The second positive result of the PSD program has been that the NPS has been able to obtain offsets on certain permits. However, as discussed above, EPA and the NPS need to establish rules that will ensure that the offsets are in fact offsetting the new emissions permitted. It is our belief that the difficulties in obtaining permits for new sources has made industry and the states more receptive to efforts to address the existing source problem, which is our biggest challenge.

Another major flaw in the PSD program is that it does not take into account the cumulative impact of all the new pollution generated since passage of the Clean Air Act. For example, permits for 26 power generating facilities have been issued in Virginia since 1986. The cumulative impact of all of these facilities on the Shenandoah National Park has never been evaluated by EPA or the state of Virginia. Furthermore, as the GAO reports have shown, many of the new sources of air pollution do not come within the PSD program. Furthermore, the PSD process in Virginia has not considered the impacts of these sources on the Chesapeake Bay nitrification problem. We believe that EPA should undertake a cumulative impact study so that all concerned can understand the total impacts of the new pollution permitted in recent years.

I would add that under the previous administration, Virginia made good progress on pollution control requirements. The state also accepted the finding that adverse impacts to visibility, vegetation, and aquatic resources were occurring. Its main resistance to the federal land managers was that it wanted to see the regional existing source problem addressed rather than having permits for cleaner new sources bear the focus of the Class I issue. We are concerned that the new administration may undermine the progress made in the PSD program.

(3) What difference does it make that a state's PSD program is a result of a Federal and not a state implementation plan?

In Virginia, the state operates a PSD program delegated to the state from EPA Region III, because Virginia's PSD program has not yet been approved. As a result, persons who comment on the PSD permit application including the federal land manager have the opportunity to petition to EPA for review of a state permit decision. In states where the PSD program has been approved, such as in Tennessee, there is no avenue to seek review by EPA headquarters. In that case, the only way to challenge a state permitting decision is to proceed to state court under the state's administrative law. Based on our understanding of the law in Tennessee and most states, this avenue of review is not satisfactory. As a result, the Tennessee Eastman permit, which NPS found would add to adverse impacts at the Smokies, was not challenged.

(4) Are nitrogen oxides being effectively regulated through the PSD program?

Nitrogen oxides (NO_x) are not being effectively regulated through the PSD program. The Great Smoky Mountains National Park is suffering from excessive nitrification which adversely effects vegetation and aquatic resources. Furthermore, both the Smokies and Shenandoah suffer from excessive ozone levels that damage vegetation and threaten human health. In the ODEC appeal, we challenged the state and EPA's failure to regulate NO_x as a precursor to ozone and the failure to consider NO_x emissions' impacts on nitrification of soils and waterbodies such as the Chesapeake Bay. The ODEC decision confirmed that EPA was not requiring an assessment of the effects of NO_x emissions on ozone levels, vegetation, or the Chesapeake Bay. EPA indicated in the decision it was considering reassessing the policy of not considering NO_x emissions' impacts on ozone levels. ODEC at 22.

The time has come for EPA to establish a regulatory program that will ensure that NO_x emissions do not continue to exacerbate ozone problems, aquatic resource degradation, and injury to vegetation. EPA should take aggressive action to address NO_x emissions. First, EPA should use its broad authority to protect Class I areas and other resources from the adverse impacts of air pollution and establish a NO_x cap at a level well below current levels that will provide protection to Class I areas and their air quality-related values and to other important resources such as the Chesapeake Bay. The National Research Council of the National Academy of Sciences has documented the role of NO_x emissions in rural ozone pollution. See "Rethinking the Ozone Problem in Urban and Regional Air Pollution" (1991). EPA should use its broad authority under Section 166 of the Clean Air Act to establish such a cap. Under a cap approach, new sources would have to offset their NO_x emissions by providing reductions in NO_x emissions from existing sources.

Another approach would be to treat an area suffering adverse impacts from ozone or nitrogen deposition resulting from NO_x emissions as a non-attainment area. The federal land managers could establish critical loads for Class I areas and once those levels are exceeded (as they most certainly are in Shenandoah and the Smokies), new sources would have to get offsets and the states with EPA's assistance would have to establish implementation plans to remedy the adverse impacts. Section 166 again provides broad authority for protecting the air quality values of Class I areas.

Other mechanisms include establishing a secondary standard for ozone that would be protective of the air quality-related values in Class I areas. Once again, if that standard was violated, the sources, both existing and new, would be treated as if they were in a non-attainment area due to the violation of the

secondary standard. EPA should also consider the use of a stringent increment for nitrogen oxides that would provide for protection from all the various impacts of nitrogen emissions.

In summary, EPA should move expeditiously to establish a NO_x regulatory program that focuses on reducing overall NO_x emissions that affect Class I areas and other valuable resources, and not get bogged down in an effort to quantify the impact of a particular NO_x source on a particular resource in a Class I area.

(5) Is it your opinion that some form of regional haze regulation is needed in addition to an effective PSD program in order to protect air quality in Class I areas?

EPA action on regional haze is long overdue. The National Research Council report on "Protecting Visibility in National Parks and Wilderness Areas" has concluded the "current scientific knowledge is adequate and control technologies are available for taking regulatory action to improve and protect visibility." The report also finds that already adopted or planned emission control programs, including the acid rain control program mandated by the 1990 amendments, "will not solve the nation's visibility problem." The report further finds that progress toward the Clean Air Act's visibility protection goal will require regional haze control programs. These programs should "consider many sources simultaneously on a regional basis." The report warns against relying on programs focused on determining individual source contributions.

EPA should begin developing regional haze regulations immediately. EPA should not wait for the deliberations of the Southern Appalachian Mountain Initiative or the Grand Canyon Visibility Transport Commission. Rather, EPA, by developing a regional haze program, can provide these regional efforts with the tools to actually improve visibility and meet the national goal of reasonable progress. EPA should target developing the regulations by the end of 1995.

(6) Should regulatory approaches to eastern and western lands be the same?

Visibility in the east is severely impaired. The average annual visual range in the east is only 1/5 of natural conditions in the summer months and episodes, of course, can be worse. The Acid Rain Trading Program hopefully will substantially reduce SO_2 emissions in the eastern United States. However, there is no assurance that the emission reduction will translate into achieving the Clean Air Act's goal of "remedying any existing impairment of visibility in Class I areas." Given the severity of the problem in the east, dramatic reductions in sulfates in the air will be necessary to achieve significant improvements in visibility. The trading allowed under the acid rain program also

makes uncertain the degree of any improvement in visibility in Class I areas. In order to ensure reasonable progress toward meeting the national goal, we believe that EPA must develop regional haze programs for both the east and west. EPA should establish a national standard for improvements in visibility that applies in both the east and west. EPA should not abrogate its responsibility and rely on regional commissions or initiatives to provide these solutions. Rather, EPA should provide tools for the regional efforts to use.

(7) What methods do you recommend for reducing the contribution of existing sources to impairment of air quality-related values?

See the discussion of NO_x control programs and regional haze programs above. There are other approaches for addressing existing sources that EPA could pursue immediately. First of all, EPA should enforce existing regulations that require state implementation plan revisions if Class I increment exceedances occur. Similarly, EPA could use its authority under the Clean Air Act to require state implementation plan revisions to correct adverse impacts at Class I areas. Thus, wherever a Class I area is experiencing adverse impacts, the SIP would have to be revised to reduce emissions so that the adverse impact would be eliminated. This would, no doubt, require multi-state SIP revisions.

(8) Do you view the Southern Appalachian Mountain Initiative as likely to yield an effective method for protecting air quality in the region?

While I believe that the Southern Appalachian Mountain Initiative (or SAMI) has some potential if only because it has brought a number of the players together with the acknowledgement that their is a serious air pollution problem in the Southern Appalachians, I do not believe that SAMI is likely to be successful in improving air quality unless EPA takes an aggressive leadership role and uses its existing authority discussed earlier in this testimony to provide SAMI with the tools to reduce air pollution. I fear that SAMI will continue to be used as a reason for delay by EPA and others.

It is important to realize certain basic parameters of the SAMI effort. First, the effort is totally voluntary and were it not for funding from EPA and Congress, it is unlikely the states would have come together. Second, we believe that states and industry agreed to participate primarily because they were seeking a way to avoid the difficult and time-consuming PSD permitting struggles that occurred in Virginia in the early 1990s. Environmentalists have been willing to participate because they are looking for ways to clean up existing sources. However, the environmental community does not have unlimited

patience and believes EPA must take the lead in order to achieve results.

Thus far, the SAMI process has been extremely slow. Since its inception nearly two years ago, SAMI has only discussed the process and procedures for the operation of SAMI. In July of 1993, the environmental community called for SAMI to make recommendations for regulatory and non-regulatory control strategies by August 1, 1995, two years later. As it turns out, SAMI has spent another year talking procedure.

Moreover, there is currently little incentive for states and industry to take action to clean up. They are currently engrossed in dealing with the 1990 Amendments. Furthermore, the states and industry often contend that the 1990 Amendments will address much of the Class I problem. While, for the reasons discussed above, we are confident this is not true, industry claims we must wait until we know the effects of the 1990 Amendments before taking any additional action. Industry seeks further assessments of the problem and the effect of the Amendments, before any solutions can be developed and recommended.

Again, we believe that the only way SAMI will make real progress is if EPA takes an aggressive leadership role and provides SAMI with tools to address the problem. It is critical that EPA not use SAMI as a reason for delay in taking its own actions. EPA should establish a deadline for SAMI to produce recommendations, no later than the end of 1995. During that time period, EPA should develop and implement tools that SAMI can use to address the problem. EPA has delayed addressing the Class I area issue in a substantial way for nearly 20 years now. There is no more time for delay.

If EPA does not act, Congress should revisit the Class I area issue and mandate actions that will address this critical problem. See Attachment 4 and Attachment 5 regarding actions Interior and EPA can take and the need to proceed without delay despite the existence of SAMI, letter from Southern Environmental Law Center to George T. Frampton, Jr., June 4, 1993 (Attachment 4) and letter from Environmental Defense Fund to Carol Browner, June 25, 1993 (Attachment 5).

[The attachments referred to have been filed for the record in the office of the Subcommittee.]

Mr. SYNAR. Ms. Shaver.

STATEMENT OF CHRISTINE L. SHAVER, SENIOR ATTORNEY, ENVIRONMENTAL DEFENSE FUND, BOULDER, CO

Ms. SHAVER. Thank you, Mr. Chairman, especially for inviting me to be here today.

My name is Christine Shaver, I am an attorney with the Environmental Defense Fund. EDF has been very involved in park and wilderness area air pollution issues for about 12 years now, and I personally have been involved with these efforts for almost 20 years.

As you noted in your opening remarks, 4 years ago hearings were held to examine the effects of air pollution in national parks, to determine just how effective existing programs were in doing their job.

As you also correctly noted, very little has happened in those intervening 4 years. Air pollution continues to damage and destroy the resources that are the heart and soul of our national heritage. Few financial resources are going into gathering the information we need, and the regulatory mechanisms that have been set up to address this are largely ineffective, if not nonexistent.

We are able to deal with only a small subset of the pollution and the sources that cause the problems, making life very frustrating for those who care about what we leave to the next generation as well as those who have a job of trying to protect these resources without the authority to do so. The accomplishments in the last 4 years have really been twofold.

One, the National Park Service has begun flexing its muscles a little, however, nobody seems to be paying much attention.

Two, there has been a reduction required at the Navajo Generating Station, a 90-percent reduction of emissions.

These two accomplishments are noteworthy because they set precedents, and they are also noteworthy because that is all that has happened. The pollution problems remain, the tools remain ineffective, and what we need to start doing is fashioning a solution to the problem that matches the problem as opposed to expecting the national parks to live off the table scraps that are thrown down from other programs.

EPA has a duty right now to develop a regional haze program. EPA's excuses are gone. The science is available. All EPA has suggested or what we assume is that they are deferring, in fact, to the Grand Canyon Visibility Transport Commission. I don't believe they have the luxury or the ability legally to do that.

Although the commission does represent an elaborate and unprecedented effort to get everybody together to try to decide what to do, it suffers from a number of problems, and it is only focusing on a small number of parks. It is designed to help the parks in the Colorado plateau address their visibility problems. It may or may not help other parks throughout the West, and it certainly is going to have no effect on the East.

Its resources are so limited that most of the work is being done by in-kind services, which have been provided for the most part by those who have the ability, the time, and the resources to participate, which in this case, means industry. Its objectives remain

fuzzy, leading to repetitive discussion about not just what we need to do but whether we need to do anything, and the consensus approach to decisionmaking that has been adopted comes with no consequences. This works in favor of those who benefit from continuing delay, and may result in the commission being mired in endless debate without any incentive to produce in a timely manner.

Now, EPA could comply with its responsibility to do a regional haze program and provide the commission with the incentive it needs to succeed if it did several things. First, send a strong signal to the Grand Canyon commission that the status quo and maintaining the status quo is not OK. EPA should also set clear target objectives for the commission regarding what constitutes reasonable progress. Now that EPA has concluded that there will be no progress unless more is done, they have an obligation to let the commission know what progress means.

In addition, I think the most effective incentive that EPA could provide to the commission is to conduct concurrent rulemaking. That is, as soon as the commission issues its draft report, which is due about a year from now, EPA could publish proposed regulations, solicit comment, and be prepared to issue a final rule as soon as the commission issues its final report and regardless of whether the commission issues a final report in a timely manner.

EPA could take into account all the information being developed. This would not, I don't think, be an insult to the commission. It would simply be saying that after 17 years of dragging our feet, we are going to do something and we are going to do it as soon as we can.

In the interim, I think it is extremely important that we not lose sight of what little ability we have under the phase I visibility program to protect visibility in parks and wilderness areas where individual sources have been identified as causing or contributing to the problems.

What I see happening now in States like Colorado, is the States are getting bogged down in lengthy studies over obvious situations, and in fact insisting that regional haze-type approaches be used to deal with existing source problems. This is really frustrating our ability to use the limited tools we have until we develop new ones.

Visibility is not the only problem in national parks, and in some areas certainly many of the other problems are more serious, and could be more catastrophic. We are tweaking with natural orders and natural systems, and I for one have no confidence that we are going to be able to field the ball when nature keeps swinging in response to the curve balls that we throw her.

EPA, I am encouraged to note, seems to have learned how to pronounce the phrase "ecosystem protection." What I would like to see now is some commitment to how that can be done and commitment to when it will be done. The best place to demonstrate that commitment would be by exercising their existing authorities to provide the types of standards and regulations and mechanisms that we need to protect the parks from existing air quality effects.

There are several things that EPA can do right now: EPA can establish national ambient air quality standards. In fact, they have

a duty to do so. That would protect against known and anticipated adverse effects on natural resources in parks and wilderness areas.

They could use their authority under section 166 of the act to establish additional—I don't want to say "increments" because few parks can take additional pollution—but they could establish critical loading factors; they could establish emission density approaches; they could establish emission caps. EPA can be doing that right now.

Now, both of those standards setting or increment setting type approaches will take time, so I have recommended to EPA through my work with its new source review task force, that in the very immediate future, that is during the time when they publish regulations in January for the new source review program, that they include a very simple mechanism that says: If there are adverse impacts occurring in class I areas, the States will revise their implementation plans to take reasonable steps in a reasonable amount of time to make progress toward alleviating those problems.

They have the authority to do that under existing law now. This would allow for a case-by-case approach until we get to the point where we are able to establish uniform standards that would kick in by themselves.

As I mentioned, there are a number of ways we can do this. What I think we need is to give EPA a bit of a kick in the pants to be directed to establish some firm deadlines and to get on with the program.

I see in their testimony that they are exploring and considering a number of things. It is time that they decided they were actually going to do something.

Thank you.

[The prepared statement of Ms. Shaver follows:]

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TESTIMONY OF CHRISTINE L. SHAVER
SENIOR ATTORNEY, ENVIRONMENTAL DEFENSE FUND
BEFORE THE SUBCOMMITTEE ON ENVIRONMENT,
ENERGY AND NATURAL RESOURCES,
COMMITTEE ON GOVERNMENT OPERATIONS
U.S. HOUSE OF REPRESENTATIVES

APRIL 29, 1994

Mr. Chairman, my name is Christine L. Shaver. I am a Senior Attorney with the Environmental Defense Fund (EDF). Thank you for inviting me to testify today. EDF has been actively involved in efforts to protect national parks and wilderness areas from the damaging effects of air pollution since 1981. I have represented EDF in these efforts since 1992, but I have been actively involved in preserving the integrity of natural, scenic and cultural resources for almost 20 years.

Air Pollution Continues to Plague Our National Parks and Wilderness Areas

Air pollution can damage and destroy the very resources that national parks and wilderness areas were established to protect. Unfortunately, the evidence continues to document that that is exactly what is happening. Air pollution shrouds spectacular scenic views, acidifies surface waters, leaches essential nutrients from the soils, injures vegetation, threatens the ecological integrity of natural systems, and damages our Nation's cultural resources. Efforts to repair the damage and ensure the long-term protection of these resources have been hampered severely by weak leadership from the federal and state government, ineffective regulatory tools, and woefully inadequate financial and human resources.

Federal Leadership is Needed

The Clean Air Act gives Federal land managers (FLMs) an affirmative responsibility to protect air quality related values (AQRVs) from the adverse impacts of air pollution, but the FLMs have no real authority to effect the necessary remedial and preventive actions. The EPA and state agencies, which together have the authority to address air pollution problems in national parks and wilderness areas, have failed to exercise that authority in any meaningful way. In short, there is no dedication to protect these resources on the part of those who bear the responsibility to protect them. Protecting our national treasures and heritage has never required that we sacrifice economic growth, but it does require a dedication to protecting these resources from air

pollution that is preventable, avoidable, and controllable.

While we are short on substance and leadership, we are up to our ears in "process". Some Class I area air quality issues have been relegated to various consensus-building fora that have been set up nationally (e.g., EPA's Subcommittee on New Source Review Reform), regionally (e.g., Grand Canyon Visibility Transport Commission, Southern Appalachian Mountain Initiative) and locally (e.g., bill pending in Colorado legislature to appoint a task force on visibility and air quality related values in national parks and wilderness areas). Although this approach reflects a positive shift away from a "one-size-fits-all" regulatory mentality, in most cases it has been replaced with an "any-size-will-do" philosophy. EPA has not just delegated its responsibility, it has abrogated it by not providing sufficient leadership and direction.

This collaborative approach to decision-making does not work unless there are clear objectives, adequate resources, balanced representation, deadlines for action, and an incentive to succeed. If these parameters are not defined, what is touted as consensus-building becomes a delay tactic in disguise. This is particularly a likely outcome in cases where "the group" is asked to come up with recommendations to address a problem that is not currently being addressed. Inertia and the quest for consensus rewards those who like the status quo/do nothing program by ensuring that nothing happens until agreement is reached. There must be some incentive to produce results. Clearly spelled out consequences can be a powerful incentive.

Current Regulatory Program is Ineffective

The current regulatory program provides a mechanism for addressing only a small subset of the pollution sources that contribute to adverse air pollution effects in Class I areas. We are simply putting tiny band-aids on gaping wounds. With respect to new sources, the program is merely designed to limit the amount of some types of new pollution that can be added to Class I area airsheds by major new sources and major modifications. With respect to existing sources, a regulatory mechanism for requiring installation of the best available retrofit technology (BART) is available only if visibility impairment in a Class I area is "reasonably attributable" to an existing source or small group of sources.

For other pollution problems in Class I areas, we rely on the hope that other provisions of the Clean Air Act will have some trickle-down effect. We are offered assurances, but provided no insurance, that the pollution control efforts aimed at nonattainment areas will reduce ozone concentrations in national parks and wilderness areas. But the improvements that may occur could easily be offset by increased pollution nearer the Class I areas--particularly increases in nitrogen oxide concentrations in

rural areas of the eastern U.S. See Rethinking the Ozone Problem in Urban and Regional Air Pollution, (National Academy Press: Washington, D.C. 1991). Also, sensitive resources are adversely affected by ozone concentrations well below the level allowed by the national ambient air quality standards.

Similarly, the Clean Air Act's acid deposition control program will reduce regional loadings of sulfur dioxide in the eastern U.S. but not to a level needed to prevent acidification of watersheds in Shenandoah National Park.

In addition, an EPA report published in October 1993 concludes that implementation of the Clean Air Act Amendments of 1990 will result in only moderate visibility improvements in eastern national parks and will not do anything to reduce visibility degradation in the West. In fact, the spectacular scenic vistas of our most treasured western national parks are likely to be shrouded in an even denser pollution haze in the future. In short, the effect of the Clean Air Act is, at best, uncertain; to the extent analyses have been done, they show that the Act will not fix air pollution problems in Class I areas.

It is time to stop feeding scraps to our national parks and wilderness areas. We must fashion effective solutions for pollution problems that threaten the heart and soul of our natural heritage. We have a legal mandate and an ethical responsibility to protect these resources in their own right and for future generations.

EPA HAS A LEGAL DUTY TO DEVELOP A REGIONAL HAZE PROGRAM

Let me begin with the most insidious and pervasive problem--regional haze. The Clean Air Act establishes a national goal of remedying any existing and preventing any future manmade visibility impairment in Class I areas. EPA was required to develop regulations to make reasonable progress toward that goal. When EPA promulgated visibility protection regulations in 1980, the Agency outlined a phased approach. Specific regulatory mechanisms were established to address existing visibility degradation if it could be traced to a particular source or small group of sources and to prevent future impairment if a major new source or modification were determined to have a perceptible impact. EPA deferred development of a regulatory program to address the larger problem of regional haze on the theory that the state of the science was not yet adequate and needed analytical tools were not available.

The National Academy of Sciences report published last year concludes that the science and tools are sufficient to support a regulatory program. Protecting Visibility in National Parks and Wilderness Areas (National Academy Press, 1993). EPA's excuse for nonaction is no longer valid. In addition, EPA itself has concluded that there will be no reasonable progress toward the

national visibility goal in the West without additional remedial and preventive actions and that the progress likely to be made in the East will fall far short of reaching the national goal. Therefore, EPA has a legal duty--right now--to develop new rules.

EPA Must Not Continue to Delay Regional Haze Rulemaking

It appears that EPA plans to ignore its responsibility to develop regional haze regulations for several years, perhaps so that the Grand Canyon Visibility Transport Commission (Commission) can complete its work and provide recommendations. As required by the Clean Air Act Amendments of 1990, EPA established the Grand Canyon Visibility Transport Commission in November 1991. The Commission, which is composed of eight western Governors, EPA, various federal land managing agencies, and tribal representatives has until November 1995 to make recommendations to EPA on what measures, if any, are needed to remedy and prevent visibility impairment in the Colorado Plateau.

The existence of the Commission does not negate EPA's underlying duty to develop regional haze regulations. The Commission's report and recommendations will have no effect on regional haze problems in national parks and wilderness areas in the East, Midwest, or Great Plains. In addition, because the Commission has decided to focus on the Colorado Plateau region, its recommendations will likely have little impact--and may even have a negative impact--on other western parks and wildernesses. Finally, given that EPA has concluded that no reasonable progress will be made toward the national visibility goal in the Colorado Plateau region without additional measures, EPA arguably has a duty to take immediate action to fill the void.

By moving forward with regional haze regulations, EPA could jumpstart the development of more cost-effective programs to reduce concentrations of fine particulate matter (less than 1-2.5 microns in diameter). These finer particles cause visibility impairment. There is overwhelming and highly disturbing evidence that these finer particles contribute disproportionately to serious health effects in urban areas, even when the PM-10 standard is not being violated. EPA has acknowledged the need to revise or supplement the current PM-10 standard, but a final decision is years away. In the interim, public health will continue to suffer, costs of medical care and lost wages will continue to mount, and states will likely continue to design pollution control strategies that do no discriminate between large (2.5-10 microns) and fine particles. If states were steered toward reducing concentrations of finer particles, they would likely focus on different types of sources and strategies and be able to maximize the cost-effectiveness of their program by protecting both public health and visibility.

Perhaps it seems unrealistic to expect EPA to leap frog over the Grand Canyon Commission and propose regulations before the

Commission has had a reasonable opportunity to complete its assessment of various options. The Commission's work plan and decision-making structure reflect an elaborate and unprecedented effort to bring all the interested public and private parties to the table in an attempt to reach consensus on whether additional measures are warranted to protect visual air quality, and if so, how emissions will be managed. I am not suggesting that EPA ignore what the Commission is doing. I believe, however, that the Commission should be given a fighting chance to succeed.

The Grand Canyon Visibility Transport Commission Needs Resources and an Incentive to Succeed

After 17 years of footdragging, the public interest demands that we make every effort to expedite implementation a regional haze program by, inter alia, ensuring that the Grand Canyon Commission's objectives are clear and consistent with the law, that there is an incentive to develop timely recommendations to meet those objectives, and that adequate resources are available.

With respect to direction and objectives, EPA must send a clear message to the Commission that maintaining the status quo is not acceptable. EPA, in consultation with the FLMs, should also provide a target objective regarding what would constitute reasonable progress; otherwise, the Commission may become needlessly mired in a never-ending debate about whether additional measures are needed. The Commission's "consensus without consequences" philosophy rewards those who benefit from delay. The Commission needs an incentive to complete its work in a timely manner. For this reason, EPA should conduct its rulemaking concurrently with the Commission's process. That is, EPA should publish proposed regulations shortly after the Commission issues its draft report next summer. EPA could solicit comments on alternative programs, drawing on the Commission's assessment of management options and supplementing them, if necessary. EPA should also commit to publishing final rules by the end of 1995.

With respect to resources, the Commission's progress and process has been hampered severely by inadequate funding. EPA gives $250,000/year to the Commission, and last year, Congress appropriated an additional $375,000. The estimated cost of the work remaining to be done is over $2 million. Because of resource constraints, the Commission has had to rely on in-kind services provided by various participants. Although on paper the committees that are carrying out the work plan appear to have balanced representation from all affected sectors, in reality the lion's share of the work is being done by those with the most time and resources to devote--in this case, industry. Their level of participation is laudable, but it is having the unfortunate effect of raising the ante for other interested players to a prohibitively high level. And while we have managed to move forward, I am very concerned about who appears to be driving the bus.

The credibility, integrity and success of the Commission's process relies in large part on having adequate resources to conduct an objective assessment of the emission management options under consideration. There is a concerted effort now being made by members of the Commission's Public Advisory Committee, including myself, to secure additional funding from Congress for the Commission. Your support of a special appropriation would be greatly appreciated.

EPA MUST ENSURE IMPLEMENTATION OF EXISTING VISIBILITY PROTECTION REQUIREMENTS

Although development of a regional haze program must be given a high priority, EPA must also diligently implement the "Phase I" visibility protection program. The existing regulations require installation of the best available retrofit technology on major stationary sources that emit any pollutant that is reasonably anticipated to cause or contribute to visibility impairment in a Class I area.

In 1989, EPA used this authority to require a 90 percent reduction in sulfur dioxide emissions at the Navajo Generating Station in Page, Arizona. In response to lawsuit filed challenging this regulation, the U.S. Court of Appeals for the Ninth Circuit found that EPA has the statutory authority to address that portion of a visibility impairment problem which is "reasonably attributable" to a specific source even if the regulation only addresses a small fraction of the overall problem. The Court also indicated that "Congress mandated an extremely low triggering threshold, requiring the installment of stringent emission controls when an individual source 'emits any air pollutant that may reasonably be anticipated to cause or contribute to any impairment of visibility' in a class I Federal area. Central Arizona Water Conservation District, et al., v. EPA, 990 F.2d 1531 (9th Cir. 1993), cert. denied.

EPA, in cooperation with numerous other parties, has recently completed a study of the Mohave Generating Station located southwest of the Grand Canyon. If the data analysis supports a finding that emissions from the plant contribute to visibility impairment at the Grand Canyon, requirements for installation of the best available retrofit technology must be imposed.

EPA must also ensure that states comply with the Phase I visibility program requirements and intercede if states attempt to establish criteria for addressing "reasonably attributable" visibility impairment that go well beyond the Clean Air Act's requirements and frustrate remedial action. For example, in July 1993, the U.S. Forest Service certified that there were adverse impacts on visibility and aquatic resources in the Mount Zirkel Wilderness Area in northwestern Colorado, which appeared to be reasonably attributable to the Craig and Hayden power plants. The

accompanying technical support document presented substantial and sufficient evidence (e.g., areawide emissions inventory, modeling analyses, sulfur isotope data) to support a finding that these plants emit air pollutants that may reasonably be anticipated to cause or contribute to visibility impairment and acid deposition in the Class I wilderness area. However, the State of Colorado, has become embroiled in a political battle, fueled by the affected utilities insistence that additional studies be conducted to quantify the impact of all potential contributors to the documented problem before additional pollution controls are required at the two plants. This is clearly not what Congress intended when it established the BART requirement for major stationary sources that contribute to visibility impairment in Class I areas. EPA must not allow states to undermine the protection afforded by the Phase I program requirements.

EPA MUST CREATE INCENTIVES TO INSURE PROTECTION OF ALL AIR QUALITY RELATED VALUES IN CLASS I AREAS

Visibility impairment is, in many cases, the first sign that air pollution has intruded into a natural environment. It is a problem in all Class I areas. Other pollution effects may not be as visible, but they are equally--if not more--severe. It is difficult to predict the course of the chain reaction that occurs when we disrupt a natural ecosystem by introducing poisonous gases into the atmosphere for plants to absorb or depositing acidic substances in the soils and water. It is impossible to know just how much we can tweak these systems before producing catastrophic results. Some argue that we shouldn't do anything until we know everything. That we can afford to wait until sound science provides us with the certainty we need before we act. Others are not so confident in our ability to field the ball every time nature swings in response to the curve balls we keep throwing. I advocate a cautious approach--we must err on the side of protection of natural resources and systems.

FLMs of Class I areas have an affirmative responsibility to protect all air quality related values (including visibility) from the adverse effects of air pollution. Adverse impacts have been documented on terrestrial and aquatic resources in numerous Class I areas, including, in particular, Shenandoah National Park and Great Smoky Mountains National Park. The primary culprit was correctly identified by the General Accounting Office in its February 7, 1990, report to this Subcommittee on "Air Pollution: Protecting Parks and Wilderness From Nearby Pollution Sources." Existing sources, which never went through pre-construction review under the prevention of significant deterioration of air quality requirements because of their size or age, are responsible for the bulk of the pollution problems in parks and wilderness areas. Yet the only mechanism the FLMs have to address these problems is the new source review process. As a result, the FLMs, with support from the environmental community, have taken the position that no

new pollution sources be permitted near Class I areas that are experiencing adverse impacts on air quality related values unless emission offsets are obtained.

This approach has been rather controversial. Industry is concerned that new sources are being held hostage unless they can find some way of atoning for the sins of existing sources. FLMs and the environmental community are concerned that this approach only serves to limit pollution increases and does little to make a dent in the existing problem. Nonetheless, this approach has had the benefit of significantly improving the efficiency of pollution control equipment installed at new sources. Also, as EPA has learned through its New Source Review Subcommittee, the FLMs and environmentalists are not about to give up the one card they have to play unless other means for dealing with air pollution problems caused by existing sources are provided.

EPA Must Establish Secondary National Ambient Air Quality Standards or Other Measures to Protect Sensitive Resources in Class I Areas

Alternative methods for addressing existing impacts in parks and wilderness areas are available now, under current Clean Air Act authorities. EPA is already required to establish national ambient air quality standards to protect against known and anticipated adverse effects on public health and welfare. 42 U.S.C. 7409. EPA should be directed to adopt secondary ambient air quality standards that would protect sensitive resources (AQRVs) in Class I areas. EPA also has broad authority under section 166 of the Clean Air Act to establish measures for protection of AQRVs and to fulfill the goals and purposes of the Act. 42 U.S.C. 7476(c). EPA's authority is not limited to establishing "increments". Emissions density zoning or critical pollutant loading approaches could be used to establish limits on total pollution concentrations in Class I areas.

If either secondary standards or new section 166 limits were violated, states would be required to revise their implementation plans to correct the violation. States, or EPA if states failed to act, would have the flexibility to obtain the needed emission reductions in the most cost-effective manner possible. Existing sources, that were exempted or grandfathered from the PSD preconstruction review process, could be required to install pollution control technology. States and EPA would have the handle they need; the parks and wilderness areas would get the relief they need.

EPA Must Enforce the Requirement That State Implementation Plans Be Revised if Increment Exceedances Have Been Documented and Clarify That SIP Revisions are Needed if Adverse Impacts Are Occurring on AQRVs in Class I Areas

These regulatory remedies would take some time to develop. It might also prove difficult, scientifically and practically, to determine an appropriate uniform standard or increment-surrogate that would protect all AQRVs in Class I areas from the adverse effects of air pollution. For these reasons, I have advocated through EPA's New Source Review Subcommittee two revisions to existing regulations which require revisions to state implementation plans if certain events have occurred.

Current EPA regulations (40 C.F.R. 51.166(a)(3)) require that SIPs be revised if there is an increment exceedance. EPA is not enforcing this requirement effectively. For example, sulfur dioxide increment exceedances at Shenandoah National Park have been documented, but new sources continue to be permitted because they do not "significantly contribute" to the exceedances. EPA must revise this regulation to indicate that if SIP revisions are not submitted in a timely manner (e.g., 18 months), the SIP will be deemed inadequate under section 110(k)(5) of the Act. A federal implementation plan would need to be imposed, and until an approved plan is in place, no permits could be issued to new sources.

The second approach I have advocated also is linked to the SIP revision requirement and could be implemented immediately, i.e., a requirement that SIPs be revised if adverse impacts are occurring on AQRVs in Class I areas. EPA must recognize that preventing adverse impacts on AQRVs is one of the primary purpose of the PSD program. If this purpose is not being fulfilled, then a SIP revision must be required. This requirement would be triggered if the FLM or another party were able to document that adverse impacts were occurring. Again, this approach would give states the flexibility to develop the most cost-effective pollution abatement strategies, including requirements for emission reductions at existing sources. The SIP submittal could be deemed adequate if it requires reasonable steps within a reasonable time to make progress toward eliminating the adverse impacts. Failure to revise SIPs in a timely manner would result in the same consequences discussed above.

All of the approaches discussed above are consistent with, if not mandated by, existing statutory authorities. EPA should be required to include the recommended changes to 40 C.F.R. 51.166(a)(3) in the proposed regulations currently under development and scheduled for publication in January 1995. EPA should also be directed to pursue the adoption of protective secondary national ambient air quality standards and additional PSD measures under section 166.

THE PSD NEW SOURCE REVIEW PROGRAM MUST BE SUPPLEMENTED TO PROVIDE EFFECTIVE PROTECTION FOR AIR QUALITY RELATED VALUES

The Subcommittee on New Source Review established by EPA to streamline the permitting process has been reasonably effective in

developing consensus on some procedural improvements related to Class I areas (e.g., methods for providing FLMs with notice of pending permit applications). However, the Subcommittee has struggled with and failed to achieve consensus on the substantive aspects of the program. The stalemate stems from the lack of any effective regulatory means for addressing existing adverse impacts. Until EPA develops requirements to mitigate existing impacts, such as those recommended above, the stalemate will continue. In any event, the new source review program must provide mechanisms for preventing significant deterioration of air quality, including adverse impacts on AQRVs.

As mentioned above, EPA has a duty under section 166 of the Act to develop measures for all pollutants to protect AQRVs and fulfill the purposes of the PSD program. Pollution increments for sulfur dioxide, particulate matter, and nitrogen dioxide have already been established. However, in 1990, the U.S. Court of Appeals for the District of Columbia Circuit remanded nitrogen dioxide increments promulgated by EPA because the Agency did not adequately consider the requirements of section 166(c). Environmental Defense Fund v. EPA, 898 F.2d 183 (D.C. Cir. 1990). EPA has not yet taken any action in response to that remand. In addition, EPA has established no measures to limit ozone concentrations in Class I areas.

EPA must directed to carry out its duty under section 166 to address other pollutants of concern. In developing additional measures, EPA must consider the fact that it would be inconsistent with the purposes of the PSD program to allow incremental increases in some pollutants if those pollutants are already causing adverse impacts. EPA should consider more creative approaches, such as a NOx emissions cap or establishment of "critical loads" to avoid any further deterioration of air quality in Class I areas.

In addition to establishing numerical standards for Class I areas that ensure protection of all AQRVs, EPA must clarify that FLMs, as the stewards of our most precious national park and wilderness resources, have the authority and responsibility to identify air quality related values and determine whether adverse impacts are occurring. If the FLM certifies that adverse impacts are occurring and provides a rational basis for that determination, the only relevant inquiry for the permitting authority should be to assess whether a new source or modification emits any pollutant that would contribute to that impact. Permitting authorities must be prohibited from using "impact-based" tests to allow construction of new facilities that do not have a significant impact on existing adverse impacts or documented increment exceedances. Impact-based tests frustrate resource protection goals. In reality, few sources have a "significant" impact on pollution concentrations, even though their emissions contribute to ambient concentrations. EPA should insist on an emissions-based test, similar to the one used in nonattainment areas, once adverse impacts have occurred. This

would include a requirement to obtain offsetting emission reductions.

EPA AND FLMs MUST HAVE ADEQUATE RESOURCE TO CARRY OUT THEIR RESPONSIBILITIES TO PROTECT AIR QUALITY RELATED VALUES

Information provides a foundation for rational decision-making. The data that exist regarding ambient air quality levels, visibility conditions, and effects on sensitive terrestrial and aquatic resources in many national parks provide a rational basis for determining whether adverse impacts are occurring or likely to occur. The pollutants that cause the impacts can also be identified, and mathematical models are available to establish source/receptor relationships and support development of remedial and preventive pollution control strategies.

However, additional information is needed to assess current conditions and establish cause and effect relationships in many national parks and wilderness areas. These information needs and associated financial resource requirements were discussed in the 1990 report of the General Accounting Office submitted to this Subcommittee. Congress has not yet appropriated funding to the FLMs to respond to these needs. In the interim, the National Park Service, which has historically exhibited the highest degree of commitment to gathering and analyzing data on air pollution conditions and effects, has had to discontinue operation of several monitoring stations because of resource constraints. Congress must provide the FLMs with the resources they need to inventory air quality related values, monitor air quality conditions (including visibility), conduct research to assess the causes and effects of air pollution, and participate effectively in permitting and regulatory decisions.

Similarly, EPA must have sufficient resources to carry out the responsibility it shares with FLMs to protect AQRVs in Class I areas. Research and staff resources are needed to support EPA's standard-setting and regulatory development efforts. To the extent EPA has delegated responsibilities regional commissions, these groups must also have sufficient funding to support their work.

SUMMARY OF RECOMMENDATIONS

EPA must develop regional haze regulations that include specific emission reduction requirements to achieve reasonable progress toward the national goal of remedying existing and preventing future human-caused visibility impairment in Class I areas. EPA must also ensure that current regulations are enforced.

If regional commissions are established to address pollution problems in national parks and wilderness areas, the overriding national interest in protecting these resources mandates that the commissions be given clear objectives, reasonable deadlines,

adequate resources, and incentives for action.

EPA must create incentives and mechanisms to ensure protection of all air quality related values in Class I areas.

EPA must establish secondary national ambient air quality standards or other measures to protect sensitive resources in Class I areas.

FLMs must have a responsibility to identify sensitive air quality related values, determine whether adverse impacts are present, and establish appropriate critical pollutant loading factors that would prevent adverse impacts.

EPA must incorporate into its pending regulatory proposal a requirement that states must revise their implementation plans if adverse impacts are occurring on air quality related values in Class I areas.

The new source review program must be supplemented to limit concentrations of all pollutants that contribute to adverse impacts on air quality related values in Class I areas.

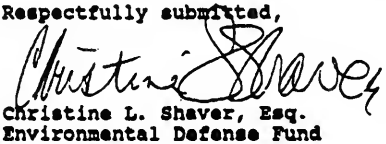
EPA must develop effective measures to limit ozone formation, visibility impairment, and acid deposition.

If the FLM has documented that adverse impacts are occurring, new sources should be required to offset any emissions increases. Impact-based test should not be used to avoid mitigation.

If increment exceedances or adverse impacts on air quality related values have been documented, and SIP revisions to correct the problems have not been submitted in a timely manner, permits must not be issued for construction of new major sources or major modifications.

Congress must provide FLMs and EPA with additional resources to inventory resources; monitor air quality conditions; conduct data analyses and research; and develop, implement and enforce programs to remedy and prevent adverse impacts on air quality related values in national parks and wilderness areas.

Respectfully submitted,



Christine L. Shaver, Esq.
Environmental Defense Fund
1405 Arapahoe Avenue
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Mr. SYNAR. Mr. Leary. Welcome.

STATEMENT OF JOHN T. LEARY, PROJECT MANAGER, AND JAMES M. SOUBY, CHAIR, OPERATIONS COMMITTEE, GRAND CANYON VISIBILITY TRANSPORT COMMISSION, DENVER, CO

Mr. LEARY. Good morning, Mr. Chairman.

My name is John Leary, I am a project manager for the Grand Canyon Visibility Transport Commission. I am on the staff of the Western Governments Association, which is the administrative arm for the commission.

On behalf of Governor Symington of Arizona, the commission would like to thank you for this opportunity to testify.

With me today to supplement my testimony within our 5 minutes is James Souby, who is the chair of the operations committee and the executive director of the Western Governors Association, along with him in the spirit of our collaborative process, we have Shawn Kendall from Phelps Dodge Corp. and Roger Clark from the Grand Canyon Trust.

As you are aware, the commission was formed under the 1990 Clean Air Act amendments and has the charge of determining what actions, if any, are necessary to eliminate the existing and prevent future impairment in parks and wilderness areas on the Colorado plateau. From the beginning, let me step back.

The commission has 18 members from eight Southwestern States in it, four Federal land managers, and EPA. The commission has recently recommended to the EPA Administrator that three tribal representatives be added to the commission.

From the beginning the commission has conducted an open, inclusive process that set up a committee process for doing its work that includes about 150 volunteers representing industry, environmental groups, local, State, Federal Government, the tribes, academia, and the general public. The purposes of our committees are twofold:

One, to develop analytical techniques to determine the relationship between emission reductions and visibility improvement; and second, to identify policies and emission management options to deal with the problem. We would like to point out three issues today that are a concern to the commission.

First of all, the commission is experiencing resource shortage right now, and what we would like to do is move to an independent contractor, and that is why the shortage exists. The contractor is needed for three reasons.

First of all, it is important that we have a very objective process and that we have independent data to make our decisions. We don't want to debate whether the costs of our proposed strategies are assessed correctly, we don't want the debate to focus on whether costs have been correctly assessed, we want it to focus on whether the cost is too high or too low. And also by this independent strategy, we somewhat address the problem that Ms. Shaver raised about the inability of private groups or environmentalists to participate in the process.

The second thing is the socioeconomic analysis we want to do requires an expertise level that is beyond what we have on our committees.

Third, the scope of the analysis is too large to deal with in-kind services, and we are forced to deal with our in-kind services. It would be very difficult for us to meet our statutory deadline which right now we are planning to meet.

Our second concern has been the lack of research support from the EPA. The National Resource Council report says there is enough information to act now, but indicated also that there are future research needs, and the way we are dealing with future research needs right now is to identify the uncertainty that might exist in our analysis.

It would be very unfortunate at the end of our process if we had certain areas that had large uncertainty bounds that might delay implementation of regulations to deal with the issue we are talking about. In sum, on this issue we do not believe that EPA has carried out the research agenda envisioned in the 1990 Clean Air Act Amendments.

The third issue we would like to address is the issue of when EPA should issue their regional haze regulations, and I turn to Roger Clark from Grand Canyon Trust to offer those comments.

[The prepared statement of Mr. Leary and Mr. Souby follows:]

GRAND CANYON VISIBILITY TRANSPORT COMMISSION

c/o Western Governors Association
600 17th Street Suite 1705 South Tower
Denver, Colorado 80202-5452
[illegible]

April 26, 1994

The Honorable Mike Synar
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Thank you for inviting representatives of the Grand Canyon Visibility Transport Commission to appear before the Subcommittee of Environment, Energy and Natural Resources. As Chairman of the Commission, I take particular pride in the work that has been done to advance the goals as set forth in the Clean Air Act Amendments of 1990. The Commission States picked up on the broad federal policy goal, and commenced to work in a cooperative manner to fashion a specific model for action. Our mission is to maximize the visibility benefits for scenic western vistas, while minimizing or eliminating any negative economic impacts on citizens and commerce.

One of the most notable aspects of the Commission's work has been to bring together representatives of industry and environmental organizations in common purpose. The focus of this collaboration will no doubt produce a longer term response to concerns about visibility impairment including technological improvements, other flexible and creative emission control strategies, voluntary reductions and regional cooperation in place of intrusive command and control strategies.

I commend to you the testimony being delivered by Mr. Souby and Mr. Leary. I hope the experience of the Commission will be of assistance to you and your colleagues, as well as a trailblazer for other regions. Thank you again for allowing the Grand Canyon Visibility Transport Commission to illustrate its accomplishments and its ambitions to your Subcommittee.

Sincerely,

Fife Symington
Governor of Arizona
Chairman

TESTIMONY FOR THE ENVIRONMENT, ENERGY AND NATURAL RESOURCES
SUBCOMMITTEE OF THE COMMITTEE ON GOVERNMENT OPERATIONS
BY MR. JOHN T. LEARY AND MR. JAMES M. SOUBY
OF THE GRAND CANYON VISIBILITY TRANSPORT COMMISSION

On behalf of Governor Fife Symington of Arizona, Chair of the Grand Canyon Visibility Transport Commission we would like to thank Chairman Synar and the Environment, Energy and Natural Resources Subcommittee for giving us this opportunity to offer testimony on the important issue of protecting environmental resources in national parks and wilderness areas.

The Grand Canyon Visibility Transport Commission (Commission) was established by the Administrator Environmental Protection Agency (EPA) pursuant to the Clean Air Act Amendments (CAAA) of 1990. The Commission is charged with making recommendations to the Administrator, by November 15, 1995, as to what actions, if any, are necessary to protect visibility in parks and wilderness areas on the Colorado Plateau. The Commission's focus is on addressing visibility impairment resulting from regional haze.

The Commission consists of the Governors, or their designees, of the States of Arizona, California, Colorado, Nevada, New Mexico, Oregon, Utah and Wyoming; and, ex officio members representing the U.S. Forest Service, the Bureau of Land Management, the U.S. Park Service, the U.S. Fish and Wild Life Service and EPA. The Commission has recently recommended to EPA that three tribal representatives be added to the Commission. The Western Governors' Association serves as the administrative agent for the Commission.

The Commission has chosen to develop its recommendation through a balanced, inclusive committee structure with deliberations open to the public. Each Commissioner has a representative on the Operations Committee which is charged with providing management oversight of the Commission's work plan. Under the Operations Committee are the Technical, Alternatives Assessment and Communications Committees with the following responsibilities:

- The Technical Committee is charged with developing analytical techniques, establishing data banks and performing analyses that establish the relationship between emissions and visibility impairment. The Committee contains Aerosol and Visibility, Emissions Inventory, Meteorology, and Modeling Subcommittees.

- The Alternatives Assessment Committee is charged with developing and analyzing emission management options in the

context of making reasonable progress towards the national visibility goal of no man made impairment in Class I areas.

- The Communications Committee is charged with developing methods and processes for ensuring effective internal communications within the Commission's structure and externally with interests groups and the general public.

The Commission has established a Public Advisory Committee. This Committee provides advice to both the Commission and the Operations Committee. It has been charged by the Commission with coming up with a consensus recommendation on making reasonable progress towards the national visibility goal.

Membership on the Public Advisory, Technical, Alternatives Assessment and Communications Committees includes representatives from industry, environmental groups, tribes, academia, Mexico, and federal, state and local governments. (See Attachment 1 for Committee membership.) The Committees operate on a consensus basis and provide a mechanism for integrating technical and policy information from public and private sources into the Commissions decision making processes.

The Commission has been operating under a combination of cash and in kind resources. It has received a base grant of $250,000 from EPA each of the last three years and in FY 94 received line item appropriation from Congress of $375,000. The value of the time contributed by committee members is estimated to be several hundred thousand dollars each year. The Commission's cash resources have gone primarily for staff, travel and limited contractual support. The need for additional funds for contractual support has become the most critical issue facing the Commission. This issue will be discussed later in our testimony.

As you can see, the Commission has embarked on an ambitious, broad based process to craft a regional solution to a problem that has regional and national significance. To date the process has been successful. Attitudes have been positive, absent of problem denial, and considerable progress has been made. We would now like to outline where we are in the process and describe the emission management options under consideration by the Commission.

The Commission has developed an emissions inventory to provide a basis for determining the contribution of various source sectors to regional haze on the Colorado Plateau. To this end, the Commission will assess all pollution species and source categories, i.e., point, area, and mobile sources, within the transport region for their contribution to haze. It is important

to note that the transport region includes the entire area of all member states. Until modeling and other impact analysis are completed, the Commission will be unable to assign specific source contributions to the problem. As a side note, the Commission is also working with the Mexican government to develop an inventory for assessing the potential impact of Mexican emissions on the Colorado Plateau.

The Commission is integrating several modeling approaches into its analytical framework for assessing the relationship between emission changes and visibility impairment. In addition, it has undertaken an analysis as to why clear days exist on the Colorado Plateau. This analysis will provide a response to the CAAA of 1990 mandate to analyze the concept of clean air corridors. It needs to be noted that the concept of clean air corridors has often been translated into "no growth" corridors which has created potentially unnecessary conflict for the Commission.
A more positive atmosphere would exist if congress had not embellished the straight forward charge of preventing future impairment.

The analytical techniques being developed by the Commission's committees will be used to analyze a candidate set of emission management options that have been approved by the Commission for in depth analysis. These options are:

- A baseline option that includes mandatory requirements in the Clean Air Act and other federal, state and local programs.

- A straight technological approach where sources would have prescribed control parameters . The concept of controls could include fuel and management practice requirements.

- A standard or visibility goal approach similar to the current state implementation plan process. In this approach standards or goals for parks and wilderness areas would be established and states or source regions would be required to reduce emissions proportionate to there contribution to any exceedences of the standard.

- An emission cap approach with the option of utilizing a market based approach to achieve and stay within caps. Caps could be either fixed or decreasing over time and trading could be indexed to visibility improvement. International trading may be a possibility if Mexican emissions are found to be a significant haze contributor.

Incorporated into each of these options will be scenarios that include such components as incentives, voluntary programs,

new source review programs and provisions for addressing both existing and future impairment. Each option will be assessed with varying degrees of emission reductions and varying time frames for the reductions.

The following criteria have been adopted by the Commission to evaluate the emission management options:

- Visibility improvement.
- Economic effects including direct and indirect costs and benefits.
- Attendant environmental affects either positive or negative.
- Social impacts on lifestyles and demographics.
- Equity across social groups, source sectors, states, etc.
- Administrative feasibility and efficiency.

Having provided an overview of the Commission's structure and approach to meeting its mandate, we would now like to move on to a number of issues that have or will affect the Commission's ability to meet its mandate.

The first is the resource base from which the Commission is currently operating. As we discussed earlier, the Commission has relied primarily on in kind services to develop its analytical techniques and emission management options. However, we are now at a juncture where the complexity of the socio economic analysis of these management options and the need for total objectivity in the analysis requires additional resources. The Alternative Assessment Committee has estimated the cost of the analysis to be $1.5 million. The Commission currently has only $250,000 to commit towards it. In addition, the Commission needs $550,000 for public input, technical tasks and additional work on Mexican emissions. In pursuit of these funds the Commission, with the support of its Public Advisory Committee has requested an $1.8 million line item appropriation from the Appropriation Committee's Subcommittee on HUD, VA and Independent Agencies. In sum, it would be very unfortunate to have the significant collaborative effort put forth to date undermined by the lack of resources to analyze recommendations in a thorough and unbiased way.

A second issue is the lack of support provided by EPA for regional haze research. However, before going into this issue we

would like to recognize the operational support EPA and other federal agencies have given the Commission. EPA and other agency personnel have been key participants on the Commission's committees. EPA Region 9's participation on the Commission and its support for Mexican inventory work have been excellent. At the same time, research data needed by the Commission to address issues associated with long range transport and the chemistry associated with this transport has not been forthcoming from EPA. Most of the research being performed by EPA, the Park Service and other agencies has focused on the source attribution of sulfates at the expense of other species and source regions. Project Mohave,a Congressionally mandated tracer study, will supply the Commission with important information but it was never intended to fill all information gaps with respect to regional haze. Furthermore, few of the remaining complex chemistry and meteorology ambiguities associated with regional haze will be answered by particulate matter and ozone research projects.

Some time ago Chairman Symington wrote to then EPA Administrator William Reilly requesting an additional focus on research and the maintenance of its research presents in the west. It is our understanding that research efforts will be reduced in FY 95 and that no research staff will be supported in the west. This action must be viewed as an affront to the Commission and the West and a reflection of EPA's lack of commitment to long term research issues associated with regional haze.

A third issue interest to the Commission is the timing of the issuance of regional haze regulations by the Commission. The issuance of regulations by EPA prior to the Commission's deadline would be seen as preemptive action by the Commission. Furthermore, the information gleaned from the Commission's process and recommendations and supporting socio economic analysis will provide the major information base for such regulations. Indeed, the concept of reasonable progress is subjective and the criteria for its evaluation should evolve from the negotiation process undertaken by the Commission's Public Advisory Committee as it seeks a consensus recommendation. The Commission should be viewed as a laboratory by EPA and as an opportunity to avoid the costly process of developing regulations in the abstract.

In addition, the model developed by the Commission should be applicable to regulatory processes for other Class I areas in the east and west. As indicated earlier, the concept of reasonable progress is subjective and thus there will not be a "one size fits all" rate of progress towards the national visibility goal; however, analytical approaches and decision criteria should be generalizable to other areas. Furthermore, the Commission's

inclusive and open process creates a model that implicitly solicits the range of values necessary to define "reasonable".

A final issue that has gotten recent attention is the future role of the Grand Canyon Visibility Transport Commission. It should be noted that the Commission does not necessarily terminate after its recommendations are made to the EPA Administrator. Its future will depend on whether it will have a legitimate role in the administration of regional haze regulations. The answer to this question will likely be a function of the type of regional haze program it recommends and the resultant program adopted by EPA. There may be no role for a Commission in a program that is a simple extensions of existing EPA regulations. On the other hand, if the program evolves as a new regional concept there may be a role for a regional body. However, one facet of the Commission's process that may be key to the successful implementation of any program is its collaborative, broad based approach to decision making. Preserving this process may require the maintenance of a regional body.

To summarize and address many of the issues raised above we offer the following recommendations:

- All efforts me made to adequately fund the Grand Canyon Visibility Transport Commission. Appropriate funding will ensure the credibility of the Commission's process and provide a sound information base for the development of regional haze regulations by EPA likely at far less cost than a separate research and rulemaking effort.

- Regional haze regulations should not be promulgated by EPA until the Commission completes its work. Again, the Commission should be considered a resource by EPA.

- In order to ensure the adequacy of future regional haze research, a multiagency agency visibility research program should be established and funded through a line item appropriation. The establishment of this unit would lead to an integrated effort and would prevent visibility from being pushed to the bottom of agency priorities . Membership should include EPA, the U.S. Park Service, the Bureau of Land Management, the U.S. Fish and Wild Life Service and the U.S. Park Service.

- EPA should be encouraged to maintain a visibility research presence in the West. The availability of the resource and an understanding of issues unique to the West are important factors for supporting Commission efforts.

STATEMENT OF ROGER CLARK, CONSERVATION DIRECTOR, GRAND CANYON TRUST, FLAGSTAFF, AZ, ACCOMPANIED BY SEAN B. KENDALL, PHELPS DODGE CORP.

Mr. CLARK. I will be very brief. Thank you, Mr. Chairman.

Specifically, to the question of whether or not regulation should be promulgated in the Grand Canyon region, the Grand Canyon Trust recommends that those regulations be deferred until the work of the commission has been completed. However, like Ms. Shaver, we think there should be adequate reason and preparedness by EPA to move forward in enacting regulations shortly after the recommendations of the commission.

Mr. SYNAR. I love commissions, don't you all?

Mr. KENDALL. I am Sean Kendall, Phelps Dodge Corp.

One of the reasons that the operations committee and commission is taking the approach they are is because of certain resolutions and recommendations they received from the public advisory committee. Chris Shaver and I serve diligently on that.

A major concern was the need for socioeconomic analysis. We have options, many options. We have reviewed those and approved the criteria. But it is important for the commissioners to understand what the consequences are, not only on the economy, but possibly on certain cultural groups in the region.

The other issue is that policy analysis should not be done with tainted funds or funds from special interests. There was a concern, a resolution from the public advisory committee, that the funds should be independent so that the product will not be confused by the public as being bought by any particular interest, whether it be environmental or industry. And that is one of the reasons that they are requesting funds at this time.

[The prepared statements of Mr. Clark and Mr. Kendall follow:]

COMMENTS OF THE GRAND CANYON TRUST REGARDING THE WORK OF THE GRAND CANYON VISIBILITY TRANSPORT COMMISSION AND PROGRESS TOWARD PREVENTING AND REMEDYING IMPAIRMENT OF VISIBILITY IN NATIONAL PARKS AND WILDERNESS AREAS ON THE COLORADO PLATEAU.

SUBMITTED TO: THE SUBCOMMITTEE ON ENVIRONMENT, ENERGY AND NATURAL RESOURCES OF THE HOUSE COMMITTEE ON GOVERNMENT OPERATIONS.

DATE: APRIL 29, 1994

Good morning. My name is Roger Clark. I am Conservation Director for the Grand Canyon Trust, a 6,000 member regional organization that advocates the conservation of the natural and cultural resources of the Colorado Plateau. The Grand Canyon Trust's headquarters is in Flagstaff, Arizona.

The Grand Canyon Trust advocates the protection of visibility at Grand Canyon National Park and the many other spectacular national parks and wilderness ares of the Colorado Plateau. The Trust was actively involved in negotiating the 1991 decision to reduce by 90 percent the sulfur dioxide emissions at the coal-fired Navajo Generating Station in Page, Arizona. I currently represent the Trust as a member of the Public Advisory, Communications, and Alternative Assessment Committees of the Grand Canyon Visibility Transport Commission.

On the clearest day, visibility on the Colorado Plateau exceeds 200 miles. But opportunities have faded for seeing some of the world's most spectacular scenery. The Grand Canyon is all too often shrouded by haze from cities, smelters, and power plants. Due to continued growth in the West, additional increases in visibility-impairing pollutants will further impede progress toward preventing and remedying visibility impairment at the Grand Canyon and other Class I areas on the Colorado Plateau. For example, under the 1990 provisions of the Clean Air Act Amendments, the Environmental Protection Agency projects a 37 percent increase in sulfur dioxide emissions in the Grand Canyon region during the next two decades.

The loss of clean, clear vistas on the Colorado Plateau is an international disgrace. More than 30 million people visit the region each year. This growing demand for viewing the world-famous landscapes of the Colorado Plateau translates into billions of dollars in direct payments for travel, accommodations, supplies, and services. But aesthetics and tourism are not the only beneficiaries of pollution-free air. The region's fragile biotic communities, endangered species, and water quality will all benefit from controlling sulfur and

nitrogen oxides, volatile organic compounds, ozone, and other hazardous emissions.

In the Clean Air Act as amended in 1977, Congress declared "as a national goal the prevention of any future, and the remedying of of any existing impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution." Congress directed the Environmental Protection Agency to promulgate regulations to ensure "reasonable progress" and a "long-term (ten to fifteen years) strategy" toward meeting that goal.

Seventeen years later, our nation has failed to develop a long-term strategy or to make reasonable progress in meeting the national goal of preventing and remedying visibility impairment in any of the United States' 158 class I areas. In fact, the EPA has yet to define "reasonable progress" or to promulgate any regional haze regulations for protecting our national parks and wilderness areas.

In 1990, Congress established the Grand Canyon Visibility Transport Commission (GCVTC) because air pollution continues to impair visibility in the Grand Canyon region. The commission is now embarked on a precedent-setting process that has eluded federal and state agencies for more than a decade.

The Commission faces a daunting challenge. Cynics say, not without justification, that the best strategy to avoid action is to form a commission. After more than two years of working with the GCVTC, I am cautiously optimistic that this process will result in an effective long-term strategy that will restore the crystal clear vistas of the Colorado Plateau. This optimism is primarily based on our progress developing and implementing an ambitious plan of work and on the high level of commitment by federal and state agencies that are involved in the process.

However, the Grand Canyon Trust believes that Congress has not appropriated sufficient funds to complete the work of the GCVTC. In particular, the Environmental Protection Agency, the National Park Service, the Western Governors Association, and state air quality offices are underfunded and understaffed to finish the process. Similarly, unlike utility and industrial interests, the Grand Canyon Trust and other nonprofit environmental groups have difficulty in participating fully in this very time-consuming process.

Given this imbalance in involvement and ability to participate, we are concerned that those who benefit by delaying the process will continue to question the adequacy of information and the legitimacy of control options. Despite the National Research Council's conclusion that "current scientific knowledge is adequate and control technologies are available for taking

regulatory action to improve and protect visibility," some members of the commission's working committees continue to argue that scientific information is insufficient to recommend regulatory actions. Such intentional efforts to delay or avoid decisions are likely to succeed if agencies are unable to provide the leadership and technical expertise to complete the work.

Finally, there are many good reasons why the EPA should be encouraged to move forward in promulgating much-delayed regulations to control regional haze in the Grand Canyon region. Nonetheless, the Grand Canyon Trust recommends that such regulations be deferred until the GCVTC makes its recommendations, assuming that the commission is sufficiently funded to complete its process. The potential to achieve a broadly-supported and effective long-term strategy to protect the region from visibility impairment offers sufficient reason to give the process mandated by the 1990 CAAA a chance to succeed. If it does not, EPA can still apply its broad discretionary authority to ensure the long-term protection of the crystal clear vistas of the Colorado Plateau.

Thank you. I would be happy to respond to any of your questions.

Roger Clark
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STATEMENT OF SHAWN B. KENDALL BEFORE THE ENVIRONMENT, ENERGY AND NATURAL RESOURCES SUBCOMMITTEE OF THE HOUSE COMMITTEE ON GOVERNMENT OPERATIONS

Mr. Chairman and Committee members, I am Shawn Kendall with Phelps Dodge Corporation, the nation's leading copper producer. During the past two years, I have devoted more than half of my time to the Grand Canyon Visibility Transport Commission's Committees. I am a member of the Emissions Subcommittee, the Alternatives Assessment Committee, in addition to serving as Secretary of the Public Advisory Committee, and the P.A.C.'s Steering Committee. I am appearing here today on behalf of the Public Advisory Committee to talk about the Commission, its process, and needs.

The Commission is charged with developing and submitting recommendations to the EPA Administrator on regulatory program options to help improve visibility in the Class I areas of the region which is impaired by regional haze. The Commission's activities represent the first of their kind: the first time a program for regional haze is being developed; the first time regional governors have been charged with coming up with a plan for the CAA; and the first time environmental interests, industrial interests, and regulatory interests have come together in a spirit of cooperation as a team to craft a solution for one of the nation's more important air quality problems.

The Commission's committees consist of the "best-of-the-best" in terms of visibility expertise both in the policy area as well as the technical area. The Commission's committees are a volunteer organization. As such, there are limitations on the manhours of effort that can be achieved in some areas. In order to assemble the information needed to perform the technical and policy analysis work required for an objective, information-driven decision making process, the Commission requires funds to allow it to retain contractors to perform bulk work beyond the scope of the committees. Last year, the Commission requested $2 million over a two year period in order to perform this work. Instead they received $375,000. This year, the Commission is requesting $1.8 million in order to discharge its responsibility under the Clean Air Act. All of us on the Public Advisory Committee, both environmental and industry representatives alike, feel strongly that the Commission needs to be provided with the resources required to do an objective analysis.

I would, therefore, ask each and every one of members here today to support the Commission's request. We only have a little over a year left to complete our mission as mandated by the Clean Air Act, and nowhere in this country are you going to get a regulatory analysis performed as thoroughly or comprehensively, with such broad sweeping effects, for $1.8 million, as you will from the Commission.

Mr. Chairman, I would like to thank you and the Members for the opportunity to discuss these issues with you today.

air\kendall.tst

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Mr. SYNAR. Let's conclude at that point and we will get into some more things in the questions.

Professor Michaels.

STATEMENT OF PATRICK J. MICHAELS, ASSOCIATE PROFESSOR, STATE CLIMATOLOGIST, UNIVERSITY OF VIRGINIA, CHARLOTTESVILLE, VA, ACCOMPANIED BY GREGORY CLAYTON, DIRECTOR, FREDERICKSBURG AIR OFFICE, VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Mr. MICHAELS. Good morning. My name is Patrick Michaels. I am associate professor at the University of Virginia and State Climatologist for Virginia. I would like to thank you for soliciting my testimony on the topic of air visibility.

It is the perception of declining visibility, as shown by the earlier witnesses, that is one of the most potent forces empowering this issue. It is particularly true here and particularly important in the Shenandoah National Park.

I am also a resident of the Shenandoah Valley and I share your concern for the park. As a scientist I have an academic interest in large-scale environmental issues.

The question I would like to address for a few moments has to do with the visibility of the park. The Federal Aviation Administration and its forerunners in the National Weather Service have employed approximately 100 specially trained observers for visibility that resides at airports; in this case, the four airports that surround the park.

Airport data is very tricky to deal with. Air visibility can differ from airport to airport because there are different horizon markers. Some airports have mountains that observers can see and others do not.

What is important is that the data is recognized as valid when it changes uniformly across a region like this. When it is a hazy day at Dulles, it is a hazy day for Lynchburg, and the same for Richmond.

These data are highly correlated with each other and they surround the park; therefore, they are representative of the park. We analyze hourly observations of these data on CD–ROM from the U.S. Department of Commerce. I would like to show you results of mean monthly visibility analyses at noontime.

This is winter. This is January mean visibility. This is 1960; this is 1990. What you see is no trend in the airport visibility data. When we go to the spring data, you see the same thing. There is no trend whatsoever.

I will skip over to the fall for a second, ignoring summer. Again, no trend in the four airports that surround the park. It is in the summer and, in fact, in 2 months in the summer we do see some trends in visibility. And I think these are worth looking at.

What there is is a trend for statistically significant decline in visibility that occurred in the 1960's in this record. It ends in 1970 in July, in 1973 in August.

Since then, since 1969, there are no statistically significant declines in visibility for any month at any airport. Five of the airport-month combinations, in fact, show significant increases in visibility.

This data has been contrasted with the studies at the Shenandoah Park. I have, from an air resources specialist, received all data that was published for the summer. This is a very, very poor report. It is incomplete. There is simply not enough data here to make any statement. In fact, one could make an erroneous statement from this data if one looked at the mean visibility in the four summers for which there is data.

This is the mean haziness that would come out of that visibility. This is an example of how one could take data and misuse it. One could erroneously conclude there has been an increase in visibility in this data. I don't believe that is significant.

Let me summarize. Why is this happening? There are several variables involved in the visibility issue one needs to look at. It is not only the emission rate that is responsible. Other factors such as climate and land use are very, very important.

Robert Davis analyzed airport visibility for the Mid-Atlantic and found after you allow for weather there is a significant increase in visibility. My colleague, Jerry Stenger, and I recently published a paper in the literature on how climactic change interacted with the visibility problem.

What we found was that the climate had changed in such a fashion in the middle 1950's and in the 1960's as to increase the flow of air from the source regions to the Shenandoah Park region.

Since then, the net flow has declined. So some of the trends we see in visibility are not due simply to emission, but also to weather. It is important that we factor these things into any potential regulation. It, unfortunately, complicates the situation, but it will certainly allow us to be scientifically based for regulation.

The implications are obvious. There have been changes in emission, but there also have been simultaneous and significant changes in climate. It is important these regulations be based on science. Perhaps nowhere is it more important than in the environmental sciences, because it is perceived reduction in visibility in Shenandoah Park, which is not demonstrated by 100 independent observers. If that is the basis for this regulation that basis appears to be flawed. Thank you.

[The prepared statement of Mr. Michaels and the chart referred to follow:]

TESTIMONY OF PATRICK J. MICHAELS, VIRGINIA STATE CLIMATOLOGIST BEFORE THE HOUSE COMMITTEE ON GOVERNMENT OPERATIONS, SUBCOMMITTEE ON ENVIRONMENT, ENERGY, AND NATURAL RESOURCES

APRIL 29, 1994

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Testimony to the Committee on Government Operations, U.S. House of Representatives

April 29, 1994

Patrick J. Michaels
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Virginia State Climatologist

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This testimony is presented on behalf of the Commonwealth of Virginia by the Virginia State Climatologist. The State Climatologist is an Associate Professor of Environmental Sciences at the University of Virginia, and this testimony is also tendered with the traditional protection of academic freedom.

****

Thank you for soliciting my testimony on the topic of air quality and visibility. I believe it is fair to say that the perception of declining visibility has been one of the most potent political forces empowering related environmental legislation and regulation.

This is particularly true in the eastern United States. The perception that visibility in our premier National Parks, such as the Shenandoah, is declining dramatically, is one with particularly important economic and policy implications, for the Shenandoah is one of our most frequently visited National Parks, with close proximity to the Washington metropolitan area.

As Virginia's State Climatologist and a resident of the Shenandoah Valley, I share your concern for the Park. As a research scientist I also have an academic interest in the large scale issues concerning our atmospheric environment, and I have frequently testified before the U.S. Congress on these matters.

****

The specific question I would like to address relates to several of the target issues for this hearing: Is there a decline in visibility at the Shenandoah Park? If not, what are the policy

implications?

The Federal Aviation Administration, its forerunners, and the National Weather Service, and its forerunners employ professionally trained staff whose duty it is to report visibility at civil airports. The purpose is obviously to maintain aviation safety.

There are four airports that surround the Shenandoah Park (Figure 1): Elkins, West Virginia, Dulles International, Lynchburg Regional (also known as Preston Glen Field) and Richmond Byrd International. Together, these airports have been served by well over 100 trained visibility observers in the last three decades.

Airport data often differ in mean visibility because of different characteristics surrounding each site. An airport located on a flat plain, for example, contains few horizon markers for an observer to base readings upon, but a mountainous one does. The result is that different airports show different average visibility, but the fluctuations from month to month or from year to year are in unison.

One measure of the degree to which the airports behave simultaneously is the mathematical correlation between them. A certain calculation reveals whether the data are independent of each other or not. In the case of the data for these four airports, the correlations are highly significant in the statistical sense. This means that in a month when visibility is reduced at, say, Dulles Airport, it also is reduced at the others.

Because these airports surround the Park, and because the data are all significantly correlated between airports, it is clear that they must represent also a location that is mutually between all of them, which is the Shenandoah National Park.

We analyzed over 950,000 separate observations of visibility since 1959, creating mean monthly values over thirty years. The results, supplied Figure 2, show mean noon visibility trends for each individual month.

There are no overall trends whatsoever in any of the monthly visibility records, either for an individual airport or in aggregate. However, there is a downward trend in July and August visibility ending in 1969 (July) and 1973 (August). *Since 1969 there are no statistically significant downward trends in any of the data.* Five of the airport-month combinations show significant *increases* in visibility since then.

Perhaps most interesting is the fact that, in those two cases in which there is a trend, all airports show it simultaneously. Thus the subsequent data, with no declining trend in any month, also appear reliable.

COMPARISON TO OTHER DATA

Transmissometer Data

Automated visibility instruments have been in place at several National Parks, Monuments, and Wilderness Areas since 1987. Figure 3 details a "typical" transmissometer summary of this data, published by Air Resources Specialists (ARS), of Fort Collins, Colorado, who were contracted by the Interior Department for this purpose.

Figure 4 reproduces the *entire* Shenandoah Park summer ("excluding weather-affected" data) record published by ARS. While the document states that it is for Winter, 1987, through Spring, 1993, the Shenandoah summer data is published only for 1989 through 1992.

It is obvious that there is very little data, and that no trends can be deduced from such a spotty record. One could calculate a trend, but it would not be statistically valid. For example, figure 5 details the trend in mean haziness from these sparse records. There is an apparent decline in haziness (improvement in visibility), but it is not statistically significant because of the very poor quality of the input data.

Survey Reports

Park visitors may report an increasing number of days with perceived poor visibility. However, there is no trend in the mean airport visibility during any period of survey. Mathematically, this *must* mean that the number of days with *above* mean visibility is also increasing; otherwise there would be a decline in the mean overall visibility.

Causes

Several variables may be involved in the visibility issue. While it is commonly assumed that only the emission rates are responsible, other factors--such as climate and land use--can be important factors.

Sloane (1983) determined that relatively high visibility noted in the early 1950s over this region occurred during relatively hot, dry summers, and that by the late 1960s we were experiencing fewer hot days and the airmasses had loger residence times. Thus seasonal and annual climatic variation is an important factor in visibility trends.

Robert Davis of the University of Virginia recently (1991) analyzed regional airport visiblity trends for the Mid-Atlantic after explicit removal of "weather" variability. The only statistically significant trends that he found since the mid-1950s were for *improving* visibility after making the weather adjustment.

Stenger and Michaels (1989, 1992) found that the most important pattern of airflow into northwestern Virginia was from the northwest (from the emission source regions of the

Ohio Valley and the Upper Midwest), and that the *magnitude of airflow* from this direction had increased from 1948 through 1970; since then the amount of northwesterly flow had declined somewhat.

This observation has never been factored into calculations on the impact of legislation on visibility in Shenandoah or other Parks or Class 1 areas. However, it is clear that it would have some effect of increasing the apparent reduction in visibility through 1970 and then providing some improvement thereafter.

REGULATORY IMPLICATIONS

If it is the perception of declining visibility in Shenandoah Park that serves as the basis for regulatory policy, that perception is incorrect. There has been no net decline in the last quarter-century; there in fact have been some statistically significant improvements since then.

In addition, the Clean Air Act Amendments of 1990, particularly those with respect to sulfur dioxide emissions, have yet to take effect. If the primary cause of temporal change Shenandoah regional visibility trends is from this source, then visibility will improve (if not compensated for by natural weather variability). The next five years will therefore certainly provide an important test of our understanding of the causes of visibility changes in this area.

The data that form my testimony consist of 950,000 separate observations of visibility taken by over 100 professionally trained observers since 1959. When then was a decline--which occurred in July and August only, and ended in 1970 and 1973, respectively--the decline was simultaneously noted at all the airports surrounding Shenandoah. The correlation between all of the airport data is highly significant, and the Park lies squarely between all of these sites. It is obvious that the trends in this data are a better representative than any other source of the true trends in visibility in the Shenandoah Park.

While there have been changes in emissions upstream from the Park, there have also been simultaneous and significant changes in climate. These changes would serve to amplify the changes in visibility observed in the long term record. However, they have not been factored into the regulatory process to date.

It is important that regulation be based upon sound science; perhaps nowhere is this more imperative than in Environmental Science. If a perceived reduction in visibility since the first Clean Air Act in the Shenandoah and surrounding rural areas is the cornerstone of new regulation with respect to those areas, such regulation will not be based upon the most exhaustive survey of trained-observer visibility data ever conducted over these areas.

FIGURE LEGENDS

Figure 1. Location of the Shenandoah Park and surrounding airports recording hourly visibility data.

Figure 2. Mean noon visibility trends for each month for the surrounding airports.

Figure 3. "Typical" transmissometer data for the Grand Canyon, Summer, 1991.

Figure 4. The entire record of summer transmissometer for Shenandoah Park, published by Air Resource Specialists.

Figure 5. Median haziness for each summer in theShenandoah Park (see text).

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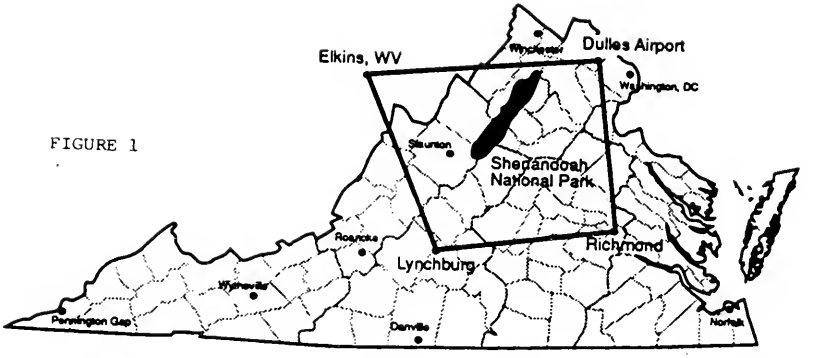

Elkins, WV
Dulles Airport
Staunton
Shenandoah
National Park
Roanoke
Lynchburg
Richmond
Wytheville
Pennington Gap
Danville
Norfolk

FIGURE 1

FIGURE 2

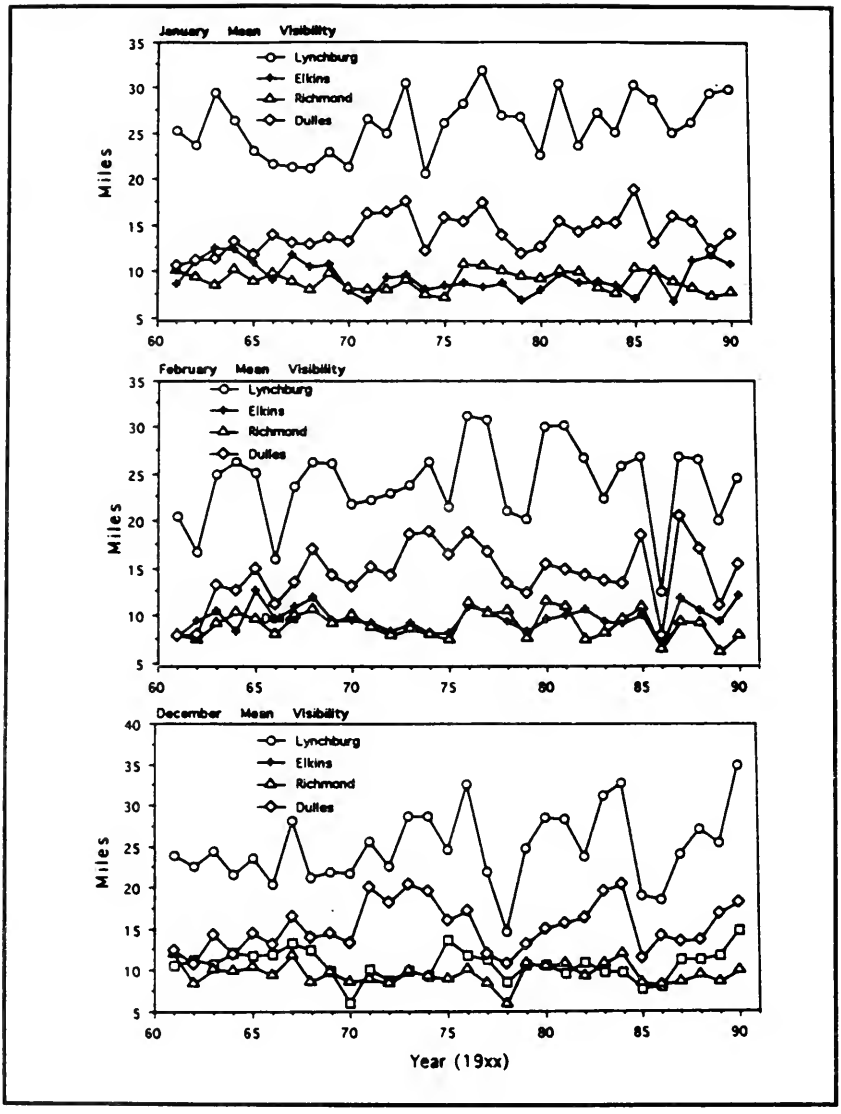

January Mean Visibility
Lynchburg
Elkins
Richmond
Dulles
Miles
February Mean Visibility
Lynchburg
Elkins
Richmond
Dulles
Miles
December Mean Visibility
Lynchburg
Elkins
Richmond
Dulles
Miles
Year (19xx)

FIGURE 2

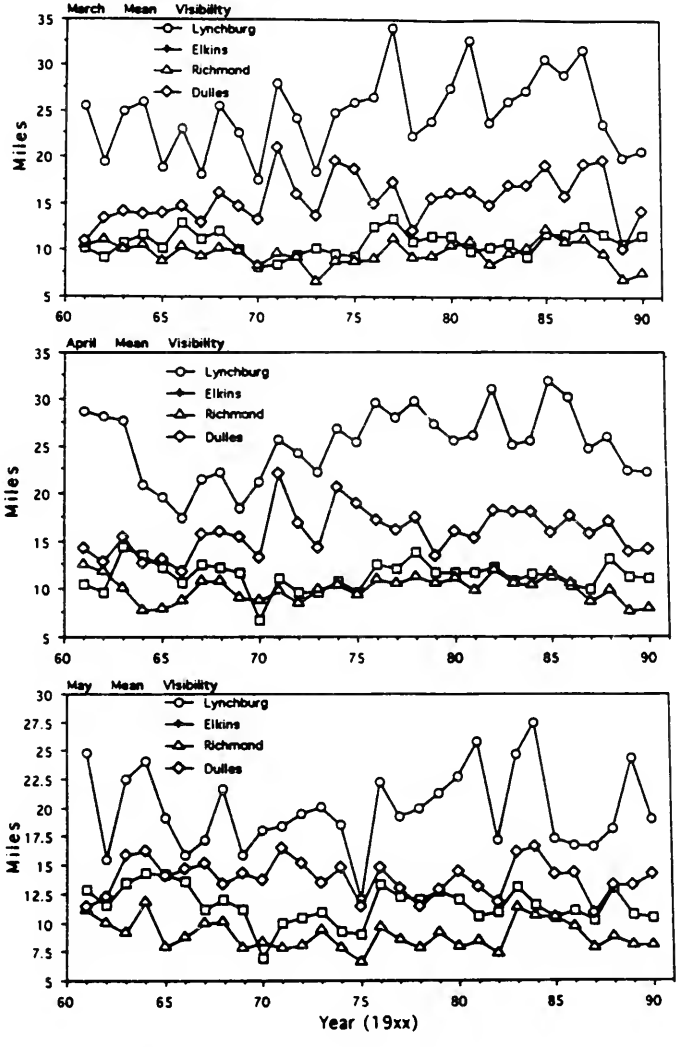

March Mean Visibility
Lynchburg
Elkins
Richmond
Dulles
Miles
April Mean Visibility
May Mean Visibility
Year (19xx)

FIGURE 2

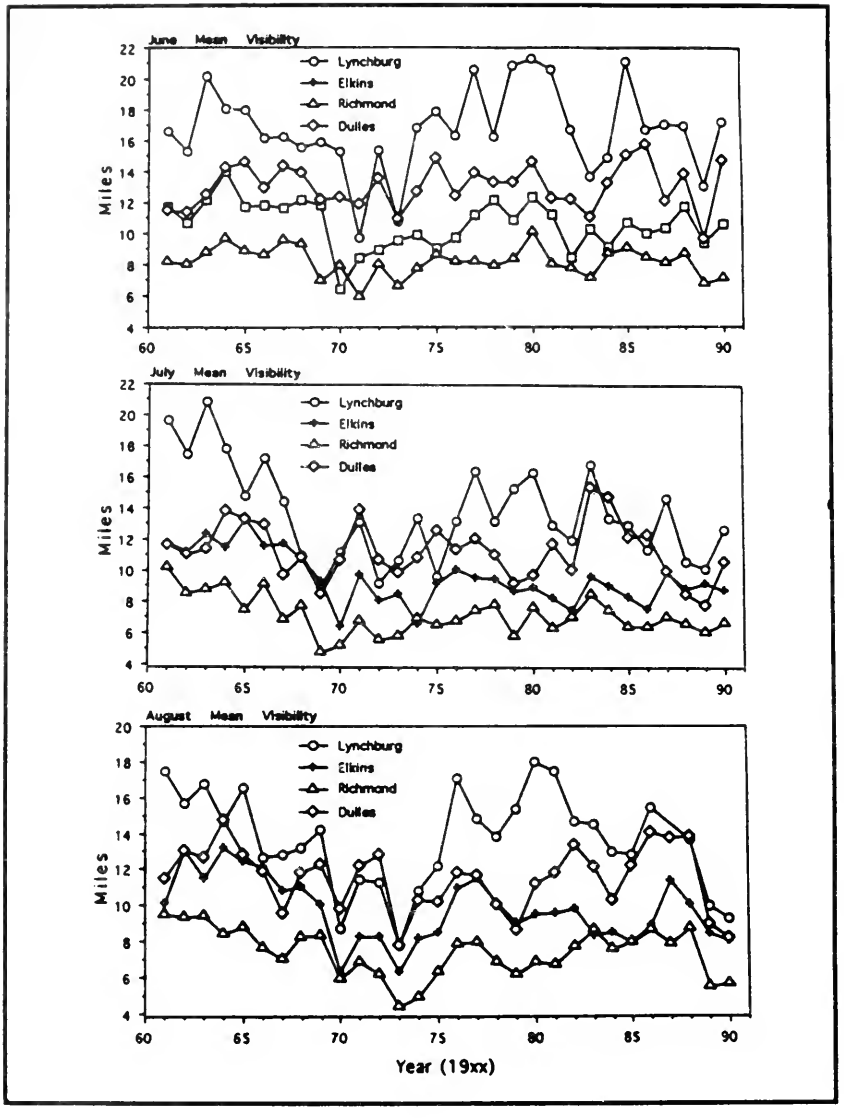

June Mean Visibility
July Mean Visibility
August Mean Visibility
Lynchburg
Elkins
Richmond
Dulles
Miles
Year (19xx)

FIGURE 2

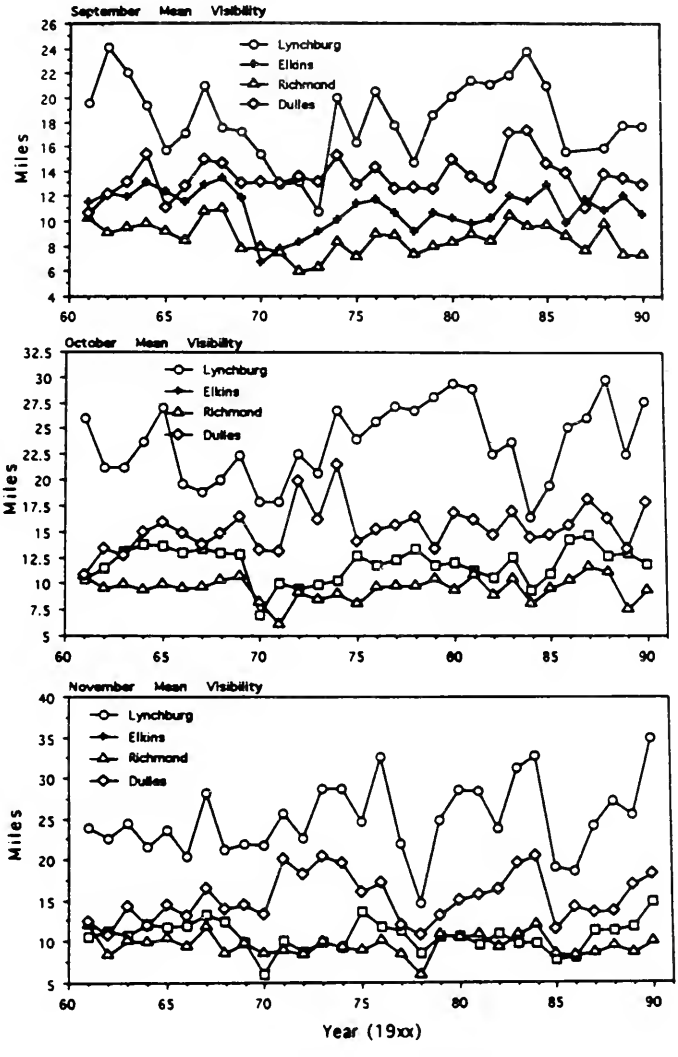

September Mean Visibility
Lynchburg
Elkins
Richmond
Dulles
Miles
October Mean Visibility
Lynchburg
Elkins
Richmond
Dulles
Miles
November Mean Visibility
Lynchburg
Elkins
Richmond
Dulles
Miles
Year (19xx)

FIGURE 3

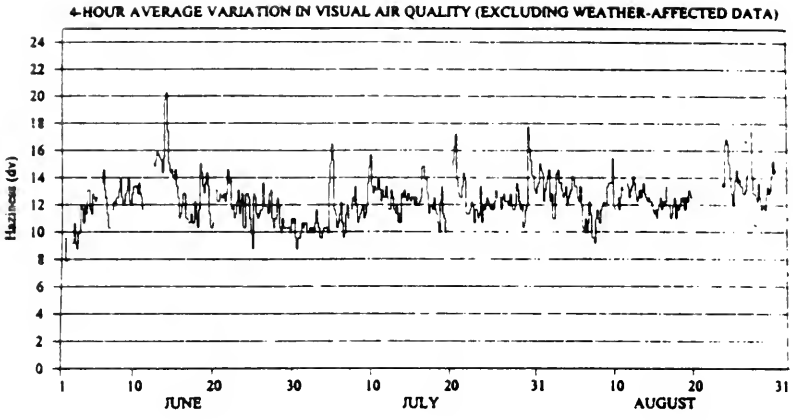

4-HOUR AVERAGE VARIATION IN VISUAL AIR QUALITY (EXCLUDING WEATHER-AFFECTED DATA)
Haziness (dv)
24
22
20
18
16
14
12
10
8
6
4
2
0
1
10
20
30
10
20
31
10
20
31
JUNE
JULY
AUGUST

FIGURE 4

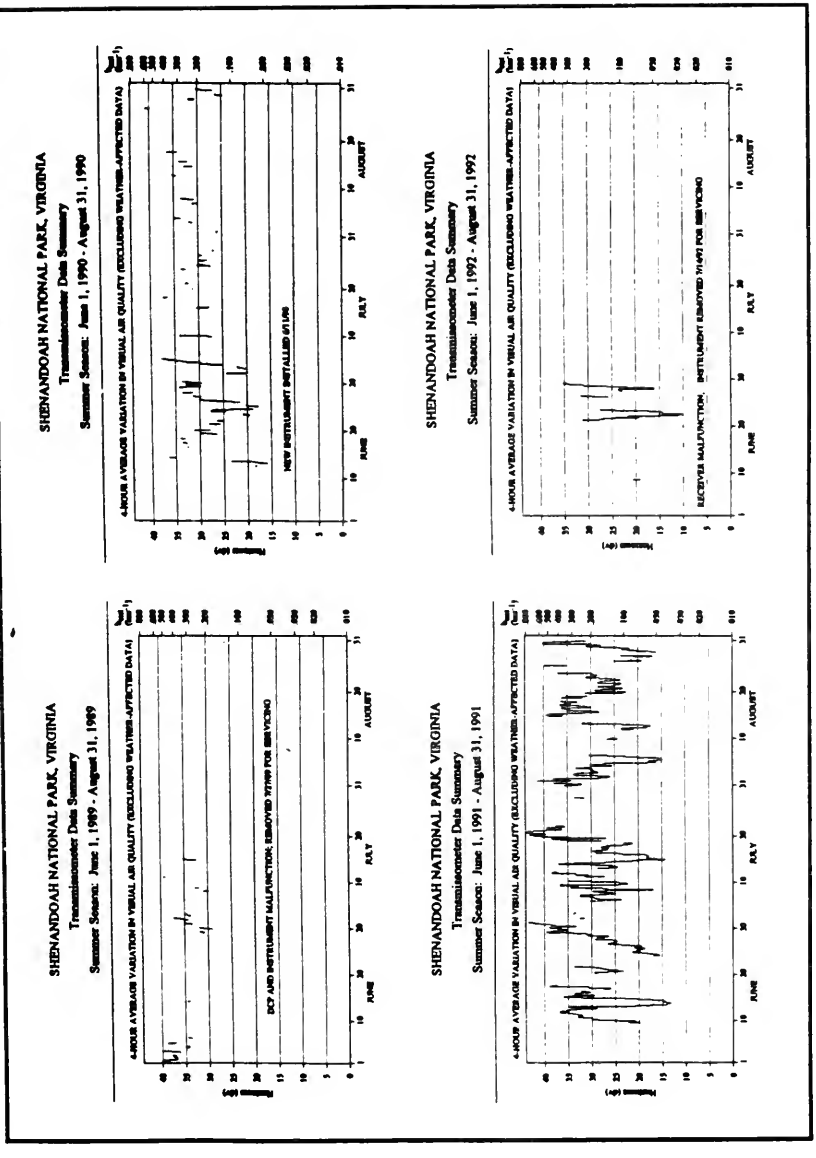
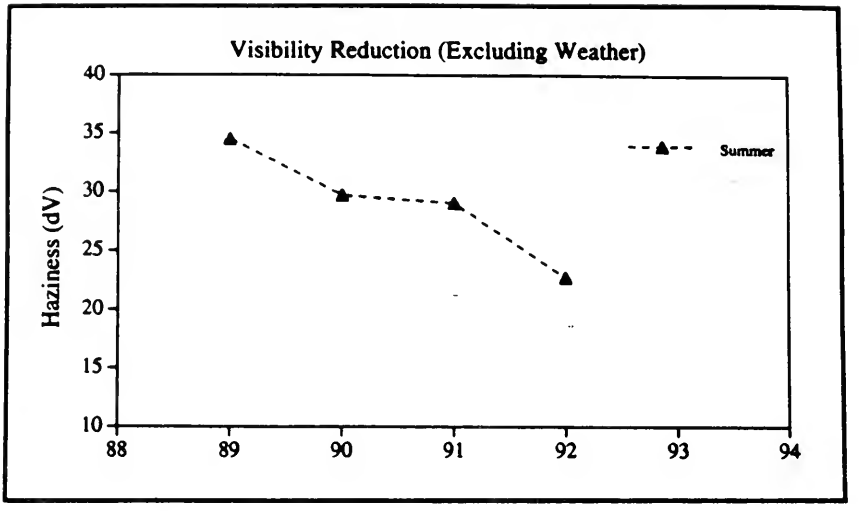

SHENANDOAH NATIONAL PARK, VIRGINIA
Transmissometer Data Summary
Summer Season: June 1, 1989 - August 31, 1989
4-HOUR AVERAGE VARIATION IN VISUAL AIR QUALITY (EXCLUDING WEATHER-AFFECTED DATA)
DCP AND INSTRUMENT MALFUNCTION; REMOVED 7/7/89 FOR SERVICING
SHENANDOAH NATIONAL PARK, VIRGINIA
Transmissometer Data Summary
Summer Season: June 1, 1990 - August 31, 1990
4-HOUR AVERAGE VARIATION IN VISUAL AIR QUALITY (EXCLUDING WEATHER-AFFECTED DATA)
NEW INSTRUMENT INSTALLED 6/1/90
SHENANDOAH NATIONAL PARK, VIRGINIA
Transmissometer Data Summary
Summer Season: June 1, 1991 - August 31, 1991
4-HOUR AVERAGE VARIATION IN VISUAL AIR QUALITY (EXCLUDING WEATHER-AFFECTED DATA)
SHENANDOAH NATIONAL PARK, VIRGINIA
Transmissometer Data Summary
Summer Season: June 1, 1992 - August 31, 1992
4-HOUR AVERAGE VARIATION IN VISUAL AIR QUALITY (EXCLUDING WEATHER-AFFECTED DATA)
RECEIVER MALFUNCTION; INSTRUMENT REMOVED 7/14/92 FOR SERVICING

FIGURE 5


Visibility Reduction (Excluding Weather)
Haziness (dV)
40
35
30
25
20
15
10
88
89
90
91
92
93
94
Summer

Mr. SYNAR. Thank you, Professor Michaels. Let's begin with you, Ms. Shaver, if we could. I am interested in a proposal you made to EPA and the Park Service on ways to improve their regulatory programs. Let's begin with your March 1994 "Outline of Existing Source Issues" which you prepared for the EPA's new source review committee.

Your first option, as I understand it, endorses more voluntary regional haze initiatives similar to those in the Grand Canyon and southern Appalachians. You mention the California Sierras, New England, and Rocky Mountains as possible candidates.

It seems from that reading that you are setting up a multiple commission group, which is exactly what we intended in section 169(b) of the 1990 Clean Air amendments. Is that your understanding?

Ms. SHAVER. Yes, and I should clarify that paper was a full range of options, and there were a lot of concerns expressed about that regional-type approach.

Mr. SYNAR. One of the things the environmental groups have complained about when these commissions are set up like the one Mr. Leary is in, is that they can't afford to attend the numerous meetings, the background studies, et cetera, and there is really lopsided participation from voluntary groups.

Do you find a need to correct that by some funding mechanism?

Ms. SHAVER. Not only through a funding mechanism, but through a people mechanism. There aren't too many people in the environmental community, so even if they had funding, they could not spread themselves among 10 commissions around the country.

Mr. SYNAR. How many people are we talking about; about how much money?

Ms. SHAVER. Within the environmental community there are probably three, four, maybe five people that could do the work in various areas of the country. I think what is needed more is strong leadership from the Federal and State governments. The goverment agencies should not be taking a back seat and letting the environmental community and the industrial people try to resolve their differences while they sit back and wait.

Mr. SYNAR. Let's look at a specific example. Do you believe that all the parties involved in the Grand Canyon commission have the same incentive to work out a workable solution?

Ms. SHAVER. No, I don't believe that they do.

Mr. SYNAR. The next option you discussed was the national regional haze initiative. Your version contains monitoring, regional emission inventories, models to estimate future emissions, periodic reassessments of the effects of clean air programs—a program very similar to what Professor White outlined. I presume you agree with Professor White's conclusions?

Ms. SHAVER. Yes, I do.

Mr. SYNAR. You have also listed two short-term mechanisms for addressing the adverse impacts in class I areas. My understanding is the first is to enforce existing regulations requiring revisions to State implementation plans where PSD increment violations have been documented. These increments are like a margin of safety to ensure against future degradation from new sources.

Why aren't those being enforced now, I guess is the question?

Ms. SHAVER. EPA and the States are not enforcing those requirements right now.

Mr. SYNAR. Why?

Ms. SHAVER. I think you would have to ask them.

Mr. SYNAR. Do you have a guess?

Ms. SHAVER. Likely, resources; and likely, priorities.

Mr. SYNAR. You recommend that if States don't correct these exceedences by changing their implementation plans, then Federal plans should go into effect. Even further, you would deny any more PSD permits and require the applicant to basically demonstrate to the land manager that the facility wouldn't cause or contribute to an adverse impact on air quality-related values.

So what you are doing by that recommendation is reversing the burden and putting it on the permit applicant, right?

Ms. SHAVER. Exactly. We are trying to create some incentive and consequence for the failure to act to make sure that something happens.

Mr. SYNAR. You go on to suggest that EPA should add a new requirement for judging the adequacies of the SIPs. If the State SIP doesn't deal with adverse impacts in class I areas, then the implementation plan should be rejected by EPA. Have you gotten any response to these suggestions from EPA or any other members on the resource review?

Ms. SHAVER. There has been a lot of discussion. I don't see consensus emerging. There have been members of the committee who say this approach would be conceptually attractive. EPA lawyers say it appears they have the authority to do this.

Mr. SYNAR. I am under the understanding that you and Mr. Carr met with the Assistant Administrator at EPA, Mary Nichols, last October on ways to include the class I area protection. Have you gotten any commitments to beefing up the program?

Ms. SHAVER. I think the main thing we got out of that was the special committee that EPA has set up to examine existing impacts in class I areas. However, there has been no commitment on EPA's part to actually deal with that problem as part of their rulemaking.

Mr. SYNAR. In your testimony you also support reviewing the national ambient air quality standard program for particulate matter to distinguish between particles on the basis of size.

Ms. Shaver, isn't it true that not only that action would revise downward to improve visibility, but it would also save some lives?

Ms. SHAVER. Sure. We keep thinking visibility is an esthetic issue. In this case EPA is now recognizing the very fine particles in the air, 2½ microns in diameter to smaller size range are having serious adverse effect on public health, including premature deaths in cities around the country.

EPA is going to take several years to consider and revise that standard. In the meantime, people are suffering. Those same fine particles are the ones contributing to visibility impairment.

If we had regional haze regulations, regional haze standards out there, the States would have an incentive now to start alleviating the pain that is being caused to large portions of the population.

Mr. SYNAR. Let me ask you the same thing I asked Professor White. Does it make sense that what the Grand Canyon commission comes up with is going to apply to the East, and is there any

reason for us to wait until that occurs to do the other things that we need to be doing?

Ms. SHAVER. Certainly the data for the Grand Canyon are irrelevant to the East. Some of the management approaches under consideration would be available in the East as well as in the West. But they are available now. Assessments of the effects of different approaches would have to be regionally specific.

Mr. SYNAR. I am told that you are involved in the Mount Zirkel issue in Colorado where the Forest Service is in the midst of a proceeding under the best available retrofit technology program. Is that right?

Ms. SHAVER. Yes, I am.

Mr. SYNAR. During the last few weeks it seems to have entered the State political arena as the Colorado Legislature figures out the appropriate standard to apply. After the Ninth Circuit Court of Appeals decision in the Navajo case, what amount of evidence do you believe is needed to make a case?

Ms. SHAVER. The Ninth Circuit, and I believe Congress, established an extremely low triggering threshold for requiring best available retrofit technology on any source that emits any pollutant that is recently thought to contribute to the problem. The information available is substantial and sufficient to show that that connection exists.

Yet, the State of Colorado, in particular the legislature, is establishing a series of tests that must be gone through and requirements for studies that haven't even begun yet, before anything will be done. And it is a sign of what happens when programs are delegated to States without direction as to how to do it. The EPA has failed to provide guidance there as well.

Mr. SYNAR. You are a member of the EPA's committee to review their new source program as it affects, class I areas. Who is in that group and what are they supposed to be doing?

Ms. SHAVER. Representatives from a variety of different groups, and we are supposed to be making recommendations to EPA.

Mr. SYNAR. Who?

Ms. SHAVER. On the subcommittee there are numerous representatives of different industries.

Mr. SYNAR. How many?

Ms. SHAVER. About 10 people, 10–12 people.

Mr. SYNAR. How often do you meet?

Ms. SHAVER. We mainly meet on the phone. You are talking about the subcommittee on existing impacts as opposed to the full committee, right?

Mr. SYNAR. Right. What are you supposed to be doing?

Ms. SHAVER. We are doing process. We are up to our ears in process. We are discussing options and trying to come to some resolution. I don't see much hope of that, because many members of the committee question, I think, the underlying objective, which is that we need to do something to protect national parks and wilderness areas. Other members think we definitely do need to do something.

The other problem we have is, unlike some consensus making arenas, there is nothing in place now. We are trying to create something where there is nothing. So there isn't something that ev-

erybody wants to change. And those that want to delay and have a benefit from delaying suffer no consequences by stalling.

Mr. SYNAR. You know, my understanding is that your primary purpose is to reexamine the best available control technology. And we have heard from GAO, who testified just before you, that their study of the permit applications in Shenandoah, for example, has showed that when that BACT program was applied that they reduced emissions by 40 percent. That demonstrates, I think, the success of Federal land managers negotiating a strict top down control strategy.

What concerns the subcommittee, Ms. Shaver, is the fact that it is just these tough top down standards that the new source review committee may be designed to undermine. How can we keep the review committee from giving away the store?

Ms. SHAVER. I think that is very difficult to do if people are not reaching for a common objective. The top down approach to BACT has been the major benefit of the PSD program. It still only serves to limit pollution increases. It doesn't reduce existing pollution levels. But maintaining the requirement for the very best control technology is something that EPA must be directed to do and not let that erode at all. It is really all we have that is firm.

Mr. SYNAR. Mr. Carr, let me direct some questions at you. You have represented a variety of environmental groups in a series of cases dealing with the class I program over the last several years. At least three times you appealed decisions by the State of Virginia to issue permits over the objections of Federal land managers and the Departments of Interior and Agriculture.

My understanding is you were also involved in a PSD case in Tennessee. Tennessee's class I program is part of their State implementation plan, while Virginia's program is delegated to them by EPA under the Federal implementation plan. What is the significance of that difference?

Mr. CARR. Where you have a delegated program as in Virginia, anyone who comments on the PSD application can appeal that permit to EPA headquarters and get review at that level. Where you have an approved program such as in Tennessee, the only avenue of review is to go to State court under a State's administrative law, and generally that is not a very productive effort.

So for that reason at least, the Tennessee permit was not appealed. I would also add the Park Service was not even allowed at that time to file its additional technical comments on the Tennessee Eastman permit, and really fell out of the process.

Mr. SYNAR. In the Hadson Buena Vista case, didn't EPA's environmental court of appeals judges agree with your arguments about the potential harm from the plant and the errors made by the State of Virginia and remand it back to the State of Virginia? What happened in that case?

Mr. CARR. Yes, we appealed it on several grounds. On the issue of whether Virginia's policy of not looking at sources beyond 100 kilometers was valid, the appeals board did not agree with us and allowed Virginia's policy to stand. That is something that I mentioned EPA needs to address is to require that sources within 200 kilometers and even large sources beyond that be considered.

With regard to the adverse impact finding in the class I area, the appeals board agreed that Virginia did not have a rational basis for ignoring the Federal land manager's findings and remanded it to the State to fully reconsider those findings. As a result, the plan is not going to be built because the plan lost its contract with Virginia Power.

Mr. SYNAR. Do you believe the State of Virginia will ever be satisfied that the land manager has made a case for an adverse impact on air quality-related values?

Mr. CARR. Will the State ever be satisfied with the Federal land manager's finding?

Mr. SYNAR. Right.

Mr. CARR. I think there is potential for that. The problem is with the plans we have been dealing with primarily, they are beyond 100 kilometers and the modeling is not there to tie that plant to the class I area. Under the current law——

Mr. SYNAR. How successful have land managers in Virginia been in general in getting Virginia to install tougher controls?

Mr. CARR. As far as tighter pollution control technology, the Federal land managers in the environmental community have been successful. Over time, Virginia has now required selective reduction, the best known control technology available on these new coal fired plants. That is an improvement. Hopefully, we can maintain that.

I am concerned with some things I am hearing from the new administration of Virginia that they may not stick with the tough standards that we have developed over these years.

Mr. SYNAR. Would you make offsets a requirement for sighting resources near national parks?

Mr. CARR. Where you have existing adverse impacts, yes. At a minimum, you should have full offsets for any new PSE source that comes in. And you should not have to get into the details of showing exactly what the impact of that plant would be and whether the offset would do it. There should just be fully missions offsets, and a regional model to determine if that would benefit the class I area.

Mr. SYNAR. Do you also agree with Ms. Shaver who says it is the duty of the State to look at cumulative impacts from new sources locating in class I areas by tracking increments of additional pollution?

Mr. CARR. Yes. That has been a failure of the process so far, to look at the cumulative impacts of permits. In Virginia there have been permits for 26 new power-generating facilities issued since 1986, and not all those have been built. But nobody has looked at the total impact of all those new sources on the class I areas.

Mr. SYNAR. One final question. Do you think that SAMI is likely to produce anything useful?

Mr. CARR. I remain hopeful, but the past 2 years of only looking at process is slowing my optimism, and without leadership from EPA, without tools, SAMI is not going to succeed. The problem is very severe in the southern Appalachians, and without that leadership, without the products that SAMI can use, it is not going to happen.

Mr. SYNAR. Mr. Leary, are you going to be able to meet the 1995 deadline for completing your report?

Mr. LEARY. The key is whether we have the resources to complete the analyses that we have done. Right now plans are, yes, we can meet it.

Mr. SYNAR. What happened to the State of Idaho?

Mr. LEARY. They are in the transport region. They have indicated they now want to join the commission and realize there will be potential impacts on them. We are in the process of getting them into the commission.

Mr. SYNAR. It is our understanding, Mr. Leary, that when the commission meets, some of the States haven't been particularly faithful at showing up to the meetings. When it comes down to the real work, getting the States to adopt the recommendations, what do you think is going to happen here?

Mr. LEARY. Well, on our operation committee, where the States have the major representation, they have attended very faithfully on some of our technical committees. The final recommendation that goes to the commission must come from the State's operations committee, which is all States to the Federal managers. So any final recommendation must go through the States.

Mr. SYNAR. The roster looks balanced. The meetings don't. For example, you actually have very little environmental participation. How are you going to plan to ensure balanced participation in the future?

Mr. LEARY. It is an ongoing problem. I think you raised the correct issue; are there resource constraints? We are trying to do three things.

First of all, we do support the travel to participate, 75 percent of it, at least. We use a consensus process that means even though it may be tedious at times, if they say, no, the process stops.

Mr. SYNAR. How are you going to work out those disputes if you require consensus as you get closer to having to come up with real recommendations?

Mr. LEARY. We established a dispute resolution process that will take it up to the operations committee, which is the States and the Federal land managers who resolve these disputes.

Mr. SYNAR. The same people who are on it now.

Mr. LEARY. On the operations committee, which is the governing body?

Mr. SYNAR. Right.

Mr. LEARY. Yes, they must resolve these disputes or give them to the commission for resolution. I think the important thing here is that there is an incentive for this commission to be successful. There is an ultimate incentive, and that is, if they are not successful, if they do not come up with a product that EPA can accept, EPA is going to do it to them.

Mr. SYNAR. Oh, I wouldn't count on that. We were here 4 years ago. That hammer was way back here. You are really threatened by EPA, aren't you? You are shaking in your boots. Mr. Leary, does it make any sense to you that we have to wait for the results of your study before EPA issues regional regulations elsewhere, particularly in the East?

Mr. LEARY. There are two answers to that question. But, Mr. Souby here keeps his job by having his pulse on the Governors in the West. I would like him to address this issue.

Mr. SOUBY. My name is Jim Souby. I chair the operations committee, which is a designee of each of the commissioners on the commission.

With respect to the regulatory issue, I share Mr. Clark's view that at least for our commission, the best interests of the commission and the best interests of improving visibility would be best served by holding off on a regulatory rulemaking process until the commission has completed its activities.

Mr. SYNAR. What about for the East?

Mr. SOUBY. I wouldn't comment on the situation in the East.

Mr. SYNAR. Does it make any sense to wait, though? Is there anything you are going to give us that is going to be duplicated in the East?

Mr. SOUBY. My view, and I think the commission's view is that we are getting into a set of issues that require a different approach. A rulemaking is not going to effectively solve the problems on the ground. We are dealing with very disparate sources. We are dealing with individual behavior and a whole array of behavioral changes that are going to require understanding.

In other words, the commission process, this tedious process that Ms. Shaver and others take exception to is, in fact, I think necessary. Our public needs to understand the consequences of not acting and, the problems that are affecting the national parks and other class I areas. That is what the commission is all about. It is to get that message out and to build acceptance for a strategy to deal with that problem.

We have an ally on the commission in our view, and that is time. We do have time, quite frankly, and that allows us to expect and be optimistic about solving these problems. I think if you tried to impose national rules, particularly in our area where you have a mandated process under way with a time line in statute, you would be inciting tremendous resistance for no good reason.

Mr. SYNAR. We are going to be back here in 4 years and nothing will have been done.

Mr. SOUBY. I think, quite frankly, we can expect EPA to take this very seriously.

Mr. SYNAR. We did in 1990 and now we are here in 1994.

Mr. SOUBY. You have got eight Governors engaged in this issue. You have got a tremendous effort under way at advising the public about the issue.

Mr. SYNAR. Mr. Leary, I wasn't going to say this, but I will anyway. Mr. Souby, I have been waiting for eight Governors in the West to figure out this grazing thing. So why would I expect——

Mr. SOUBY. We are working with Mr. Babbitt on that question as well.

Mr. SYNAR. I had to say that.

Mr. SOUBY. Can I make some recommendation for Federal action, though, that I think would be supportive? First of all, obviously the resource question I think is very important.

Second, I think in terms of whether you are going to have rulemaking or any other process, the issue of visibility itself needs to be elevated.

Mr. SYNAR. It is not even a high priority, is it?

Mr. SOUBY. The Secretary announced a national parks program and quite frankly we were surprised visibility wasn't included.

Mr. SYNAR. How, for example, will the cutbacks in atmospheric research at EPA hurt your efforts?

Mr. SOUBY. We think they already have. We filed a resolution. We sent correspondence to the previous administrator.

Mr. SYNAR. Are EPA and the land managers trying to coordinate their priorities with your priorities?

Mr. SOUBY. It is hard to answer that question.

Mr. SYNAR. The answer is, no.

Mr. SOUBY. I don't want to—you would have to single out agencies. Some agencies have worked with us and, in fact, are taking this seriously and then there are some agencies where they don't come to the commission meeting and what have you and that is a problem. So it varies.

Mr. SYNAR. Are you looking at air quality related values other than visibility?

Mr. SOUBY. Definitely. As a matter of fact, that is a major benefit in the analysis we are trying to obtain funding for.

Mr. SYNAR. I want to summarize with you. Let me see, if I have got this right. Your argument for why we should wait—if we do—for the rest of the country, is that we are going to learn through your trial and error how one of these works.

Mr. SOUBY. Rulemaking may be in order elsewhere in the country. I am just saying with respect to this initiative, I think the best interests of solving the visibility problem are carrying out the process that was set forth. If this had not been in the statute, if this process had not begun, we would probably have a different point of view. But the fact is we are engaged very seriously. We have just turned the corner into actually analyzing options, control options and other strategies.

Mr. SYNAR. So your argument is just don't do it for the West?

Mr. SOUBY. I represent the West. It is very hard for me to argue on other regions of the country. So I don't feel like I can answer a question on a national basis. But I feel very strongly I can answer the question from our perspective in our region.

Mr. SYNAR. It does make sense not to wait. In other words, there is no reason to not do it elsewhere if your product is not going to help them. That is just common sense.

Mr. SOUBY. I am not so sure I agree. Again, I go back to the nature of the issue. I am not familiar specifically with sources of emissions in other areas of the country, if in fact they are easily targeted and identified, then rulemaking and the rest of the strategy might work. But if they are, in fact, individuals, camp fires, very difficult to enforce type situations, then I think you have to spend more time thinking about an effective strategy if you want to actually see results on the ground. And I think that is important.

Mr. SYNAR. I will look for a little extra for your stocking this year for your defense of EPA. Mr. Souby. I will tell Carol Browner you were very good.

I am not a scientist, nor is anyone on my staff, but I would like to ask you a few questions regarding those charts you used, because that is an area of expertise that you have. I will also give the Department of Interior scientists a chance to comment on your data as part of their presentation. Did you look at any data before 1960? For example, I am told 1950 was a much better year to use since it was a lot cleaner.

Mr. MICHAELS. The CD–ROM unfortunately begins in 1960. There are airport data available, a little bit more difficult to work with——

Mr. SYNAR. Did you look at it——

Mr. MICHAELS. Hold on. I looked at the literature. You do see declines of visibility in the 1950's in the airport data.

Mr. SYNAR. Did you look at it?

Mr. MICHAELS. I looked at a paper by Dr. Sloan in which she looked at it and commented that there are declines——

Mr. SYNAR. That is hearsay looking.

Mr. MICHAELS. That is reading scientific literature. It is not hearsay. She commented that much of the decline in the 1950's could be attributed to some of the weather characteristics as well as emission characteristics.

Mr. SYNAR. Are sulfate trends consistent with visibility trends? In other words, when sulfate went up, visibility went down?

Mr. MICHAELS. They are partially consistent. That is the problem.

Mr. SYNAR. The Parks Service says, yes. What do you say to that?

Mr. MICHAELS. I say that after the Clean Air Act of 1970, which took time to take effect, that visibility appears to have improved actually slightly before that took effect so one can't make a definite statement on that.

Mr. SYNAR. What do you think causes these visibility problems at Shenandoah?

Mr. MICHAELS. There are a lot of things. It is a very complicated issue. It is not just emissions. It is weather. It is the land use characteristics. We have a highly vegetative surface. It is a fact that there is a natural background haze which is considerable. Contentions that the—and I read in one person's testimony that the annual mean visibility has dropped by—is only one-fifth of what it was. That can hardly be the case because that would imply background visibility of about 100 miles.

There is no heavily vegetative latitude that has that background visibility. Those are very complicated issues.

Mr. SYNAR. How much of the air quality problem is from out of State?

Mr. MICHAELS. I can't give you a hard number on that.

Mr. SYNAR. Do you have any idea?

Mr. MICHAELS. I would defer to my colleague in the Department of Environmental Quality on that.

Mr. SYNAR. How much of that is out of State? Identify yourself for the record.

Mr. CLAYTON. My name is Gregory Clayton. I am director of the Fredericksburg Air Office of the Virginia Department of Environmental Quality. I cannot give you a specific answer as to how much of that—the pollution may be coming in from out of State. Certainly the Department recognizes that there is considerable impact from out of State.

Mr. SYNAR. What States and what sources?

Mr. CLAYTON. As far away as the Ohio Valley and perhaps further. One of the things that the Department feels should also be looked at is a regional approach to this problem.

Mr. SYNAR. Mr. Michaels, do you think the State of Virginia is trying to set a standard for impairment that no one can meet?

Mr. MICHAELS. I cannot answer that. Perhaps my colleague could.

Mr. SYNAR. How about you, Mr. Clayton? Do you think the State of Virginia is trying to set a standard for impairment that no one can meet?

Mr. CLAYTON. Yes, sir.

Mr. SYNAR. In many of their PSD comments to Virginia, Federal land managers suggested that the State require offsets for new sources. Do you think the State has the authority to require offsets?

Mr. CLAYTON. We believe that it may be appropriate to require offsets in cases where adverse impacts are shown, that a new source would significantly contribute to adverse impacts, yes, sir.

Mr. SYNAR. You know, this testimony that you all presented today is disturbing. All of us in this room, at least in the immediate area, go to the Shenandoah a lot. I go. You saw the pictures. That is disturbing.

All of us who love national parks, particularly the ones we can drive to and use, being residents part time here, are you all concerned about those pictures? Are you concerned about that haze? Doesn't that bother you? Mr. Michaels, doesn't it bother you?

Mr. MICHAELS. I am certainly concerned about large scale anthropo-generated reductions in visibility. However, the pictures you showed are very, very telling. I was most impressed with the one in the middle, which is the average visibility, because 100 specifically trained observers could not find a decline in that mean visibility in the last quarter century.

When the visibility did decline or when it changed from between years, from month to month, all the airport observers saw it simultaneously. So we are not looking at a decline in the last quarter century.

Furthermore, I think there is a very interesting piece of information that may be coming from the park visitors themselves. The park visitors, I have read in news reports, and that is the best I can do with it, have stated they perceive an increased number of days in which the visibility is dramatically impaired. I think you probably have read that, too.

Because we cannot find that increase—by the way, that occurred in the 1980's. That is my understanding. Because we cannot find a change in the mean visibility, the average visibility, that means that if the average stays the same and the perceived number of bad

visibility days went up, then the number of good visibility days had to also have increased.

Otherwise, the average would have changed. That is my answer to your question.

Mr. SYNAR. Is there a global warming problem, Mr. Michaels, in this world?

Mr. MICHAELS. There is an information problem about global warming. That is not directly related to this area.

Mr. SYNAR. What is the State of Virginia going to do, Mr. Michaels, on this problem, which I think 99 percent of us in this room think exists, but obviously you don't? Is the State of Virginia going to do anything?

Mr. MICHAELS. I am not here to speak on policy. You may ask my colleague.

Mr. CLAYTON. I am not here to speak on policy.

Mr. SYNAR. Well, I am not trying to tell George Allen how to run his business down there, but I am telling you, Oklahomans wouldn't tolerate that stuff.

Let me thank this panel. I appreciate the insightful testimony, which has helped us. Stay tuned. Thank you all for coming.

Our final panel this morning, the Honorable Adela Backiel, Deputy Assistant Secretary for Natural Resources and Environment, U.S. Department of Agriculture. The Honorable George Frampton, Assistant Secretary for Fish, Wildlife and Parks, U.S. Department of Interior, and the Honorable Mary Nichols, Assistant Administrator for Air and Radiation, U.S. Environmental Protection Agency.

Mr. SYNAR. Let me swear all the government in here, since we have got it all here today. Let me ask anyone who may be asked to testify if any of you have any objections to being sworn? If not, please stand and raise your right hand.

[Witnesses sworn.]

Mr. SYNAR. Welcome. We will, as we have with the previous panels, include the entire testimony as part of the record. Why don't we begin with you, Ms. Backiel.

STATEMENT OF ADELA BACKIEL, DEPUTY ASSISTANT SECRETARY, NATURAL RESOURCES AND ENVIRONMENT, U.S. DEPARTMENT OF AGRICULTURE, ACCOMPANIED BY DENNIS HADDOW, AIR QUALITY PROGRAM MANAGER, ROCKY MOUNTAIN REGION; AND WILLIAM McCLEESE, ACTING ASSOCIATE DEPUTY CHIEF, NATIONAL FOREST SYSTEM

Ms. BACKIEL. Good morning, Mr. Synar. Thank you very much for the opportunity to testify today. With me are Bill McCleese, Acting Associate Deputy Chief for the National Forest System, and Dennis Haddow, our Air Quality Program Manager for the Rocky Mountain Region of the Forest Service.

The effects of air pollutants on forest ecosystems are of major concern to us. A survey of wilderness users indicated that viewing the scenery through clean, fresh air is one of the most important wilderness attributes. However, every wilderness area we have monitored has haze present to some degree and wilderness ecosystems are highly susceptible to air pollution impacts.

On national forests, 88 wilderness areas encompassing almost 15 million acres are afforded special protection as class I areas under the Clean Air Act.

My written testimony addresses all of the questions that you asked in your letter of invitation. What I would like to do now is summarize based on three major points. First, an overview of the activities we had since 1990; two, the combination that our research and management programs offer; and three, the collaborative efforts that are so important to trying to solve these problems.

Since 1990, the Forest Service has doubled its visibility monitoring budget. We have added emphasis to our air quality programs since 1990 by increasing our specialty staff by 20 percent and expanding the budget for these programs by 15 percent.

Since your last hearing, Mr. Chairman, the Forest Service has also conducted 10 air quality related value screening workshops for agency specialists and managers. One outcome of these workshops is the identification of air quality related values and the development of specific screening criteria for all 88 class I areas, which focuses our efforts on the most critical pollution threats.

Our research has expanded by 25 percent, and it focuses on the response of ecosystems to air pollution. We plan to have a complete, full inventory of class I areas by the year 2000.

My second point is that what is necessary to help solve these problems is a clear combination of research efforts and management efforts. The two must be combined. A better understanding of the relationships between air pollution and forest ecosystem health is vital to making informed decisions to protect all ecosystems from damage by air pollutants.

In 1990, we began implementation of a national forest health monitoring program in six New England States. Six additional Eastern States were added to this program in 1991, and in 1993, this initiative was expanded to include the first Western States; California and Colorado.

One area that we feel requires additional research and development is the application of computer models for long distance transport of air pollution.

The commonly used models are not really designed for complex terrain or for long distances. And the long distance situation is often the factor in class one areas. A cooperative effort has been established between EPA, the Park Service, and the Forest Service to adapt and refine models for this purpose.

Management aspects of our program absolutely depend on information from our research programs. The Forest Service role in implementation of the Clean Air Act is to evaluate the level of effects and present this information to the State regulatory agencies and the Environmental Protection Agency in support of our recommendations. However, while we have the responsibility to administer and protect the designated class I areas, the authority to take action on those recommendations lies with the States and with EPA.

Therefore, coordination with EPA and any regulation that the EPA develops are extremely important to us. Since 1990, the Forest Service has made source-specific adverse impact determinations

in three cases, which would have impacted the James River Face Wilderness in Virginia.

In addition, the agency has responded on six other proposals with initial concerns that the applicant was able to address through mitigation. The agency has also indicated concerns on approximately 20 others where we did not feel we had sufficient data to make a call, but wanted to alert the State and the applicants that concerns existed, which the agency desired to address by working in cooperation with the States and the applicants.

The Forest Service formally certified the impairment of visibility and aquatic ecosystems in the Mt. Zirkel wilderness to the State of Colorado in July 1993. Technical information indicated that it was reasonable to conclude air pollutants were impairing both visibility and aquatic ecosystems within the Mt. Zirkel wilderness.

We are currently working in cooperation with State agencies and with the circle air quality study collaborative to address both the visibility and the ecosystem impacts.

There is one major area of concern for the Forest Service in Colorado. It is possible that the State of Colorado may not be able to address the impacts to aquatic and terrestrial ecosystems through existing regulation. In response, the Forest Service has requested consideration of a change to the State's air quality regulations and has submitted language for such a proposed rule.

The State could fix the visibility issue with a series of controls. However, that could exacerbate the acid deposition problem. Consequently, we feel strongly that both the visibility and the aquatic ecosystem problems need to be solved, addressed and solved at the same time.

My third point was on collaborative efforts. Because of the ubiquitous nature of how the act was written, collaborative efforts are absolutely essential. We think that is taking place. Successful implementation of the Clean Air Act will require a combination of all of our research and management results and experiences in a collaborative effort.

The Department of Agriculture, Mr. Chairman, stands ready to do what is necessary to continue implementation of the Clean Air Act and to work in cooperation with others toward that end. Thank you.

[The prepared statement of Ms. Backiel follows:]

STATEMENT OF
ADELA BACKIEL
DEPUTY ASSISTANT SECRETARY
NATURAL RESOURCES AND ENVIRONMENT
UNITED STATES DEPARTMENT OF AGRICULTURE

Before the

Subcommittee on Environment, Energy, and Natural Resources
Committee on Government Operations
United States House of Representatives

Concerning "Federal Efforts to Maintain and Improve Air Quality in National Parks and Wilderness Areas"

April 29, 1994

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

Thank you for the opportunity to participate in your examination of Federal and State protections afforded pristine Class I air quality regions such as National Parks and Wilderness Areas. I am accompanied by Dennis Haddow, Air Quality Program Manager for the Rocky Mountain Region of the Forest Service.

The management of designated Class I areas within the U.S. Department of Agriculture falls under the jurisdiction of the Forest Service and I will confine my remarks to the efforts of that agency. My testimony will address each of the areas you requested.

RESOURCES

The effects of air pollutants on the forest resources are of major concern to us. The Forest Service manages 191.5 million acres of National Forests and Grasslands in 42 States. About 34 million acres of this land is Congressionally designated as wilderness. Eighty-eight Wilderness areas, encompassing 14.9 million acres are afforded special protection as Prevention of Significant Deterioration (PSD) class 1 areas under the Clean Air Act. Seventy one of the Class I areas containing about 93 percent of the Class I acres are in 10 western states. In the East, although the total Class I acerage is relatively small, the Class I areas occur in more States than in the West. A list of these Class I areas was provided to the subcommittee.

Summarize the existing visibility programs of the Department of Agriculture. Discuss whether you view them as adequate to protect and enhance air quality in Class I areas, and, if not, what improvment should be necessary to make them effective.

The Clean Air Act, as amended in 1990, directs the Forest Service as a Federal land manager to: (1) review and make recommendations to States regarding their proposals to redesignate Federal lands to Class I; (2) protect air quality related values in Class I areas; (3) ensure conformity with State implementation plans (SIP) for emissions of regulated air pollutants from lands and facilities administered by the Forest Service; and (4) participate as an ex-officio member of Visibility Transport Commissions, which evaluate visibility in Class I

areas and prepare recommendations to the Environmental Protection Agency (EPA).

The existing visibility protection programs of the Forest Service are aimed at the characterization and protection of visibility on all lands managed by the agency. The Forest Service Air Resource Management Program has three main objectives:

(1) To protect the 88 Class I areas that we manage by remedying existing and preventing future adverse impairment due to air pollution;
(2) To protect forest and grassland resources from significant adverse effects of air pollution and atmospheric deposition through cooperative efforts with air regulatory authorities; and
(3) To minimize the adverse impacts of land management activities on air quality.

Each of the nine National Forest System regions is responsible for achieving these objectives. Each Regional Forester and some Forest Supervisors are the delegated Federal Land Manager for purposes of the Clean Air Act. Most Regional Foresters have a program manager who provides staff support. The Supervisor of each National Forest is responsible for air resource management, including the protection of each Class I area. We have expanded our air resource management capability by more than doubling our technical staff and by increasing our sampling in Class I areas since an internal program review in 1986. We plan to complete a full inventory of Class I areas within the National Forest System by the year 2000. Given the limitations that all agencies face, we view our program as both effective and adequate to accomplish the necessary tasks.

Summarize your Department's relationship to the Environmental Protection Agency's visibility program and to the Class I protection program of the Department of the Interior. Is it your opinion that some forms of regional haze regulations could be based on current knowledge even if more sophisticated regulation might need to wait for additional data or further refinements in modaling?

Our Class I area sampling program is coordinated with the respective State air quality agencies, the Department of the Interior (DOI) and the Environmental Protection Agency (EPA). Contact and coodination with these organizations has been both frequent and professional. In our opinion, the relationship has been excellent. Currently, we are sampling in those Class I areas that we think may be threatened by air pollution. This sampling program, designed to inventory the resources affected by air pollution (excluding those involved in research), has projects distributed across all regions. We have collected visibility data at more than 70 Class I areas. Visibility data we collect is shared with the Department of the Interior, the Environmental Protection Agency, and the States. We operate aquatic ecosystem sampling sites and terrestrial floral plots, including lichen sampling sites. We also cooperate in the national visibility monitoring program known as IMPROVE (Integrated Monitoring of Protected Visual Environments). A list of our FY 1994 projects was furnished to the Subcommittee.

Finding solutions to the regional haze problem will be both scientifically and politically challenging. Numerous agencies, States, and industries have the potential to be effected by solutions. However, as with the regional ozone problem, we believe the regional haze issue could be addressed by regulation with the

current understanding of the science of haze formation and with the legislation now in place. The regulation could take many forms but should include consideration of New Source Review (NSR) emission trading programs, the establishment of a secondary standard for visibility impairing pollutants, and consideration of naturally occurring pollutants such as those from burning vegetation. We also feel that Regional haze regulations should be tailored to individual regions of the country. The development of these regulations should be accompanied by a national strategy for accomplishing program goals. The strategy should include a standard measure of visual air quality, a monitoring program and milestone objectives which could be adopted into State Implementation Plans.

Are EPA's research programs adequate to support the missions of the Federal land managers?

EPA's research programs are not adequate to independently support the missions of the Federal land managers, nor should they be expected to do so. EPA has a regulatory role and the Federal land agencies a management role. The missions of the various Federal land managers are diverse and it is important that the research programs of the Federal Land Management agencies in the Department of the Interior and the Department of Agriculture be coordinated and information shared with one another, EPA, and the States. There are areas where EPA could coordinate finite Federal resources such as researching the effects and trends to ecosystems from air pollution and in sponsoring atmospheric deposition research. Much remains to be learned about the response of ecosystems and their components to air pollution and we

are working within USDA and cooperating with other Federal land managers to expand our knowledge.

A few examples of the research conducted by the Forest Service clearly demonstrate the different agency roles. For more than 3 decades, Forest Service Research has conducted studies on the effects of air pollution on trees and forests. Initially, this research focused on the toxic effects of high concentrations of pollutants from point sources. In general, these were local effects. Later, researchers tackled the regional air pollution problem in southern California. This research was instrumental in the finding that ozone is damaging trees and forest ecosystems throughout the mountains of southern California including the western Sierra Nevada into central California.

During the 1980's, in response to concerns over "acid rain", Forest Service Research greatly expanded efforts to study a broad range of possible effects of air pollution on forests throughout the United States.

We recognize much of the research conducted under the National Acid Precipitation Assessment Program (NAPAP) was not conclusive. Because trees live for decades or centuries under normal conditions and often respond in subtle ways to stresses such as air pollution, air pollution research on forests takes time. This research is continuing as a major component of our Global Change Research Program.

A better understanding of the relationships between air pollution and forest ecosystem health is vital to making informed decisions to protect all forest ecosystems from damage by air pollutants. The need for an ecosystem approach to air pollution research is stressed in the Forest Ecosystems and Atmospheric Pollution Research Act of 1988 (Public Law 100-521) which directed the Forest Service to undertake adequate long-term monitoring of the health of forest ecosystems. In 1990, we began implementation of a national Forest Health Monitoring program in six New England states. Six additional eastern States were added to this program in 1991, and in 1993 this initiative was expanded to include the first western states--Colorado and California. This program is conducted in close cooperation with the State forestry agencies and the EPA's Environmental Monitoring and Assessment Program.

One area that requires additional research and development is the application of computer models for long distance transport of air pollution. The determination of adverse impact in Class I areas from proposed and some existing air pollution sources requires the use of leading edge science and technology. Atmospheric modeling is a critical tool for estimating impacts for proposed sources. Unfortunately, the commonly used and recommended EPA models were not designed for complex terrain or for distances beyond 50 kilometers, as is often the case with Class I areas. A cooperative effort has been established between EPA, the National Park Service, and the Forest Service to adapt and refine models for this purpose. Progress is

being made, but additional work is required in the development of computer modeling of the long distance transport of air pollution.

Explain the improvements that the Department has made since our 1990 hearings in quantifying air quality-related values, including the condition of our resource inventories.

Initially, we focused our air resource management program on the larger PSD permit applications with obvious potential threats to Class I areas. We developed a screening procedure in cooperation with EPA which focuses our efforts on those Prevention of Significant Deterioration (PSD) applications most likely to impact Class I areas. The Forest Service has conducted ten regional Air Quality Related Value (AQRV) screening workshops for agency specialists and managers. Reports documenting the proceedings and conclusions from these workshops have been published for three of these workshops and four more should be published by the end of the year. During each workshop available data about the condition of the resources potentially and actually affected were evaluated and screening values for each AQRV were established. These AQRV's allow us to evaluate potential impacts to the resources we manage from new source permit applicants so that we focus our review efforts on the most critical pollution threats. Since 1990, the Forest Service has developed specific screening values for all 88 Class I areas.

Should regulatory approaches to eastern and western lands be the same? If not, how should they be different?

Meteorology and air pollution issues as well as the topography are radically different between the eastern and western United States,

therefore, regulatory approaches to air quality issues should be different. The science underlying these differences is well known and includes the facts that the western atmosphere is generally dry while the East is moist; the natural visibility in the East is lower than in the West; sulfates are the major visibility impairing pollutant in the East while nitrates and organics also play a large role in the West; and ozone is a far greater threat to terrestrial ecosystems in the East and far West than in the intermountain West. As an example, an ambient standard for fine particles sufficient to improve visibility by 10% in the West would not necessarily result in a noticeable change in the East.

Consequently, regulatory approaches in air pollution control should include these and other regional considerations such as the presence of fire-adapted ecosystems and the fact that small additions/reductions to atmospheric loadings are more critical for many high elevation ecosystems that occur in the West. Generally, thresholds, standards and levels of protection should be more sensitive in the West to adequately protect the resource although many areas in the East are already at or beyond critical levels.

Explain the effects of air pollution on plants, animals, lands and waters under the jurisdiction of the Department of Agriculture.

While much has been learned, the effects of air pollution on the National Forest System are only partially understood. A large body of knowledge exists about factors that control the response of vegetation to air pollutants and acidic precipitation. However, there are major uncertainties which prevent a comprehensive analysis of wide scale

impacts on terrestrial ecosystems. Nevertheless, the following general conclusions can be made. Tropospheric ozone currently adversely affects most terrestrial ecosystems in the eastern United States and in southern California. Sulfur deposition adversely affects many lakes and streams in the central and northern Appalachian areas, noteably in West Virginia, Virginia, Vermont and in north central Colorado. Mercury deposition has contaminated the habitat and the fish populations in the northern tier lakes to the extent that restrictions on human consumption have been imposed. Haze caused by human generated pollutants is present in every wilderness monitored.

Detail the Department's relationship with the State of Colorado with regard to issuance of State facility permits which may impact air quality at the Mt. Zirkel Wilderness Area. Describe the Department's program for protecting air quality at the site including any meetings with utility or environmental groups.

The Forest Service formally certified the impairment of visibility and aquatic ecosystems in the Mt. Zirkel Wilderness to the State of Colorado on July 14, 1993. Technical information indicated that it was reasonable to conclude air pollutants were impairing both visibility and aquatic ecosystems within the Mt. Zirkel Wilderness. While the responsibility to protect Wilderness from human caused impacts, such as air pollution lies with the Forest Service, the authority to require air pollution sources to reduce their emissions is held by the State of Colorado.

The State of Colorado must next determine "resonable attribution". That is, the Colorado Air Pollution Control Division, in cooperation with the Forest Service and any other interested parties, can initiate

a study to determine if it is reasonable to believe that the sources named in the Forest Service Certification are causing or contributing to any of the visibility impairment in the Class I area. The third step in the State of Colorado's process is to require the source(s) to apply for a Best Available Retrofit Technology (BART) permit that identifies required emission reductions.

The Forest Service is further cooperating by participating in the Zirkel Air Quality Study Collaborative which was formed as an advisory group to promote:

(1) Cooperation between the various participants to coordinate and where possible jointly plan and develop information about the air pollution impacts in the Mount Zirkel Wilderness, their sources and potential solutions;

(2) A timely, responsibe and inclusive regulatory process;

(3) Communication and exchange of perspectives between various interested parties; and

(4) Communication with the general public.

Members include representatives of 11 organizations/entities including the Colorado Air Pollution Control Division, Forest Service, EPA, Routt County, Environmental groups and the owners of the Hayden and Craig power stations.

The Forest Service, in close cooperation with the State of Colorado, has also taken the opportunity to coordinate monitoring and analysis activities with some of the best visibility and atmospheric deposition experts in the country, including those in the EPA, USGS, and NPS.

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There is also another major concern for the Forest Service in Colorado. It is possible that the State of Colorado may not be able to address the impacts to aquatic and terrestrial ecosystems through existing regulations. In response, the Forest Service requested consideration of a change to the State's air quality regulations and submitted language for such a proposed rule change. Others have proposed legislation, which has been introduced in the State of Colorado legislature, which would make it very difficult for the State to remedy impairment in the Wilderness or adopt the Forest Service proposed rule change. However, it is uncertain at this time whether any of this legislation will be passed. In addition, the Colorado Air Quality Control Commission has conducted a hearing to determine whether or not to postpone a hearing on the proposed rule change and consequently the rule change hearing has been continued until November 1994.

Detail the Department's involvement with the impact of new powerplants on the James River Face Wilderness Area in Virginia.

Since 1989, the Forest Service has responded to nine Prevention of Significant Deterioration (PSD) permit applications for power plants in the Commonwealth of Virginia. In three cases, the Forest Service made adverse impact determinations to provide for protection of air quality related values (AQRV's) within the James River Face Wilderness.

The Forest Service made it's first two adverse impact determinations in 1991 on the Multitrade and Old Dominion Electric Cooperative draft permits. The third adverse impact determination was made in 1992 on

the Hadson Power 14 permit application. All three determinations were based on demonstrations that sulfur dioxide (SO2) emissions from the individual facilities would adversely affect the air quality related value (AQRV) of water quality in the Wilderness.

Since 1992, the Forest Service has commented on two additional permits for power facilities. Adverse impact determinations were not made in these cases because the Forest Service was unable to quantify the impacts of the emissions from the individual sources on the air quality related values (AQRV's) of the Wilderness area. The Forest Service bases its impact analysis on the results of emission transport modeling conducted by the applicant. The models currently used are only reliable up to 100 kilometers from the source. As a result of the most recent permit review, SEI Birchwood, the Forest Service requested that the Virginia Department of Environmental Quality require large sources greater than 100 kilometers from the Wilderness to model impacts using "Mesopuff II", a new computer model which can handle transport over greater distances.

How many State permit applications for new source reviews has the Forest Service commented on in the last five years? How have these generally been resolved?

In the last five years, the Forest Service has commented on about 240 new source reviews. The Clean Air Act prescribes an "affirmative responsibility" to Federal land managers of Class I areas with the requirement to prevent significant deterioration (PSD). The Forest Service reviews permit applications and provides the state regulatory agency or EPA with findings and recommendations regarding effects from

proposed major new and modified stationary sources on air quality related values.

Our role is to evaluate the level of effects and present this information to the State regulatory agency in support of our recommendations. Comments on these applications have yielded a variety of results including no action taken by the State, post-construction monitoring in the class I areas, emission reduction requirements beyond what was initially requested, more detailed modeling and applicants deciding not to pursue the permit.

The Forest Service does not address all permit applications in detail. One of the tools we use to help streamline and prioritize our review process are the Forest Service air quality related values (AQRV's) screening criteria which have been prepared for all Class I areas.

Summary

In Summary, the Clean Air Act Amendments of 1990 are being implemented but in the short time since enactment it is difficult to assess any changes in ecosystem health directly attributable to the amendments.

As required by the Clean Air Act, the Forest Service strives to conduct activities that conform with State Implementation Plans. We have found that New-Source Review (NSR) (Section 165(d) of the Clean Air Act) is most effective when the Forest Service is involved in the

pre-application meetings. Our knowledge of potential adverse effects on National Forests significantly contributes to the review process. New-Source Review works best in States or portions of States that have low air pollution loadings.

Forest Service research is making progress in the identification, quantification, and mitigation of air pollution effects on ecosystems. Forest Service research contributed scientific data during the acid rain debate that culminated in the 1990 Clear Air Act Amendments. Studies on air pollution effects continue. Additionally, the Forest Service participates with EPA and State agencies in the new Forest Health Monitoring initiative.

Opportunites exist for improvement of implementation of the Clean Air Act such as the incorporation of new technology in our modeling and there is a need, as demonstrated by the Mt. Zirkel situation, to establish regulations to protect sensitive aquatic and terrestrial resources from new and existing air pollution impacts.

All of the involved agencies appear ready to do what is necessary to continue implementation and provide clean air for the country, particularly in Class I areas. The availability of resources will be the determining factor for the speed of conducting scientific research and monitoring activities.

This completes my testimony. I will be pleased to answer any questions you may have.

SUPPLEMENTAL STATEMENT

U. S. DEPARTMENT OF AGRICULTURE

Forest Service expenditures for visibility programs and other air quality-related work including research and monitoring.

Research expenditures related to Class I Air Quality.

FY 91	$4.4 million
FY 92	$4.9 million
FY 93	$5.4 million
FY 94	$5.6 million

Expenditures for all visibility monitoring.

FY 91	$0.3 million
FY 92	$0.3 million
FY 93	$0.4 million
FY 94	$0.6 million

There is no line item for these expenditures. The figures are based on interpretation of the Forest Service Budget and allocations to the field.

Mr. SYNAR. Thank you, Ms. Backiel. Ms. Nichols.

STATEMENT OF MARY NICHOLS, ASSISTANT ADMINISTRATOR, OFFICE OF AIR AND RADIATION, U.S. ENVIRONMENTAL PROTECTION AGENCY

Ms. NICHOLS. Thank you. It is a pleasure to be here today and I would like to acknowledge and appreciate your leadership, Mr. Synar, on this issue, and the committee's long-time interest in preserving the natural beauty and splendor of our national parks.

As you know, the Clinton administration is committed to fully implementing the Clean Air Act and to improving the air quality in our parks, forest, wilderness areas, and other public lands. I would also like to comment that this is an issue about which I personally feel very strongly as well.

If I may indulge the committee, when I was in a comparable position in California State government during the late 1970's and 1980's, California set long-range visibility air quality standards. We also set a fine particle standard prior to the Federal Government moving on that, and explicitly made protection of visibility one of the factors that we used in setting that standard.

I am pleased to announce here today that based on the conclusions of the national academy study, as well as my assessment of other provisions of the Clean Air Act and its requirements that are statutory obligations under sections 169 (a) and (b), EPA is beginning the process to develop rules to address regional haze.

As I will discuss, this effort will incorporate the recommendations of the Grand Canyon Visibility Transport Commission——

Mr. SYNAR. This is a major announcement, right?

Ms. NICHOLS. It is. You heard it here. I think it represents a shift, Mr. Synar, in what you have heard.

Mr. SYNAR. That is the widest turn I have ever seen.

Ms. NICHOLS. The map that I have brought with me today indicates and highlights the kinds of air quality problems that are facing parks and wilderness areas. And I think, although obviously the print is way too small to see the names of the parks that are included there, the major point is that the broad reddish areas on the map represent areas affected by regional haze, as far as we understand them today.

The yellow area over the East is affected both by regional haze and by acid deposition. And the purple areas cover those class I areas that are primarily affected by damage from ground level ozone.

Most of these conditions are not caused by one single source or group of sources near each park or wilderness area but by the mixing of emissions over a broad region. We believe it is important to protect those areas that currently have good air quality from the increasing influence of regional emissions that are not already addressed by the programs which examine emissions from new major sources.

My written testimony covers in some detail all the programs that EPA has under way that will help to protect and improve air quality in parks and wilderness areas. The SO_2 reductions resulting from our acid rain program will certainly have the largest beneficial effect on sulfur-related air quality in class I areas, particu-

larly in the East. But we are also implementing other major regulatory programs that will achieve unprecedented reductions in emissions of ozone precursors and particulates.

EPA established and is working with the Grand Canyon commission to look at the Colorado Plateau. The commission is to report by November 1995, and EPA has provided substantial support to this commission, much of it provided by an $8.5 million effort called project mojave which, among other things, will estimate regional source impacts on the Grand Canyon Park as well as other nearby class I areas.

We have also formed a subcommittee to review issues related to reform of the new source permitting process under the existing prevention of significant deterioration regulations. And I would just like to comment that we are putting that committee on a time schedule. They have been told their recommendations are due by June and that EPA will proceed with recommendations for reforming the new source review process, including some consideration of the PSD issue and the impact of existing sources on class I areas, regardless of whether the committee reaches consensus in a timely manner or not.

EPA also helped to form and fund the Southern Appalachian Mountain initiative, SAMI, to address other class I concerns in that region.

Mr. Chairman, despite the improvements we expect from the various ongoing programs we have described, we believe new initiatives are needed to address the remaining air quality problems in class I areas. In order to be prepared to move as quickly as possible once we have received the recommendation of the Grand Canyon commission, we plan to initiate the technical activities needed to support a regional haze rulemaking so we will be ready to fulfill our statutory responsibilities.

The immediate effort will focus on developing the technical tools such as models and monitoring techniques for regional planning to address haze in all class I areas.

Based on the program recommendations from the Grand Canyon Visibility Transport Commission when those are completed in November 1995, as well as the work of SAMI, we will develop a strategy to address regional haze impairment in all class I areas.

In addressing the different regional problems, we plan to bring various constituencies together to explore alternative approaches, including nonregulatory options where appropriate.

With respect to the damage caused by ground level ozone or smog in class I area ecosystems, we will incorporate the technical information about such damage into our ongoing review of the national ambient air quality standard for ozone.

I have also directed my staff to explore the effectiveness of a short term, probably 24-hour nitrogen oxide increment in the prevention of significant deterioration program to address ecosystem effects of nitrogen loading as well as its possible effects on the formation of ozone.

Finally, I have asked my staff in each of our program offices to consider protection of class I areas as part of their ongoing regulatory activities. By building on existing programs, we believe that we may be able to leverage our resources and bring about improve-

ments in class I area air quality sooner than might otherwise occur.

Mr. Chairman, that concludes my oral statement. I will be pleased to answer any questions I know you will have.

[The prepared statement of Ms. Nichols follows:]

TESTIMONY OF
MARY NICHOLS
ASSISTANT ADMINISTRATOR
OFFICE OF AIR AND RADIATION
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENT, FNERGY AND NATURAL RESOURCES
OF THE
COMMITTEE ON GOVERNMENT OPERATIONS
U.S. HOUSE OF REPRESENTATIVES

April 29, 1994

Good morning. It is a pleasure to be here today to discuss the Environmental Protection Agency's (EPA's) programs to protect the air quality in our national parks and wilderness areas. I share the Chairman's and this Committee's longtime interest in preserving the natural beauty and splendor of our national parks. As you know, the Clinton Administration is committed to fully implementing the Clean Air Act (Act) and to improving the air quality in our parks, forests, wilderness areas, and other public lands. Mr. Chairman, I also want you to know that this is an issue to which I am personally committed, as well.

Mr. Chairman, as you know, most of our national parks and wilderness areas are subject to some visibility impairment from distant sources which combine to form regional haze. This has been well documented by monitoring conducted by EPA, the National Park Service and the U.S. Forest Service since 1977. We also know that the causes and severity of regional haze vary greatly between the West and the East. In addition, the Forest Service and the National Park Service have documented damage to sensitive plant species as a result of exposure to ground-level ozone (smog) in many of our parks and wilderness areas. In several areas like Acadia National Park and Shenandoah National Park, we have even monitored levels of ozone that have exceeded the EPA-established national ambient air quality standard to protect human health and welfare effects. In addition, we see damage to the aquatic and terrestrial ecosystems in several of our national parks. Most of these conditions are not caused by one single source or group of sources near each park or wilderness area, but by the mixing of emissions over a broad region. We

believe it is important to protect areas that currently have good air quality from the influence of regional emissions. To address these concerns, I would like to review programs already underway as well as plans for the next few years.

Currently, EPA has many programs underway which help to protect and improve air quality in parks and wilderness areas The Act provides for special air quality protection for large national parks, national wilderness areas, and other important natural areas, known as federal "class I" areas. The 1990 Amendments to the Act, through efforts of the Chairman and others, specifically addressed regional visibility protection for class I areas by 1) requiring a Report to Congress on expected effects of the Clean Air Act Amendments on visibility in class I areas; 2) providing for additional technical studies and support; 3) calling for the establishment of the Grand Canyon Visibility Transport Commission to examine the need for further regulatory actions and report back to the EPA; and 4) based on these studies, reports and other relevant information, directing the Administrator to address regional haze regulations.

The current program that will have the largest effect on air quality in class I areas is the 10 million tons per year reduction of sulfur dioxide emissions under the acid rain provisions. Recently promulgated rules under the acid rain program will require a reduction of almost two million tons per year of nitrogen oxides emissions. In the past year, EPA requirements have taken effect to reduce particulate emissions from diesel engines and lower the sulfur content of diesel fuel. These measures, as well as our new programs calling for improved smoke management practices for reducing particulate matter emissions from prescribed fires, will help to improve or maintain air quality in our class I areas. Over the past three years, EPA has also issued a series of regulations requiring cleaner cars and fuels, and has helped guide state implementation of new controls on stationary sources to dramatically reduce emissions of the volatile organic compounds and nitrogen oxides that cause ground-level ozone (smog). Ozone facilitates the

atmospheric processes that create regional haze and causes ecological damage in class I areas in the East and in Southern California.

In addition, we are continuing to work on specific source related air quality impacts to our class I areas by monitoring implementation of the Navajo Generating Station sulfur dioxide emission limit requirements EPA set in 1991. We are also working with states, other federal agencies and others on state or region-specific issues; this includes working with the Forest Service and the State of Colorado on issues related to visibility and other air quality-related effects at the Mount Zirkel Wilderness, and working with the National Park Service and representatives of the Government of Mexico concerning visibility protection for the Big Bend National Park. With respect to regional haze conditions, a good starting point for my discussion today is the National Academy of Sciences Report (Protecting Visibility in National Parks and Wilderness Areas, January 1993). Among other things, although the NAS Report stated that there is still some uncertainty regarding the relationship between human activities and visibility, the basic science needed to address regional haze is now available. The Report also concluded that progress towards remedying and preventing visibility impairment in class I areas will require regional programs that operate over large geographic areas and limit emissions of pollutants that can cause regional haze.

In addition, as required by the Act, EPA issued a Report entitled "Effects of the 1990 Clean Air Act Amendments on Visibility in Class I Areas: An EPA Report to Congress, October 1993." That Report reviewed requirements of the Amendments, especially those efforts related to acid rain and attainment of the ozone and particulate matter national ambient air quality standards, and estimated changes in regional visibility conditions for class I areas. The EPA Report indicates that, primarily due to the acid rain program, class I areas of the Eastern U.S. should see noticeable improvements in visibility conditions, with the largest improvements likely in the central to southern Appalachian Mountain areas. The Report estimates that in the Western U.S., general growth in emissions related to

population increases would be offset by application of control measures. This, taken with a projected small growth in electrical energy demand, means there would be little change in Western regional visibility conditions. Consequently, there will still be perceptible man-made regional visibility impairment in all class I areas nationwide.

As I indicated earlier, the Act contains provisions to address regional visibility. The timing of EPA's responsibility to address regional haze regulatory requirements is keyed to the final report of the Grand Canyon Visibility Transport Commission. Required under section 169B of the amended Act, the Commission is comprised of eight Western states -- Colorado, New Mexico, Utah, Nevada, Oregon, Arizona, Wyoming and California -- as well as EPA, the National Park Service, the U.S. Forest Service, the U.S. Fish and Wildlife Service, and the Bureau of Land Management. EPA is currently working with the Commission to improve representation of Native-Americans of the region on the Commission and its committees.

EPA established the Commission on November 13, 1991 and broadened its scope to look at regional haze impairment for all class I areas on the Colorado Plateau which is located near the Four Corners area of New Mexico, Colorado, Utah and Arizona. The Commission is charged by statute with developing a report to EPA by November 1995. The Act calls for the report to include recommendations to EPA on what measures should be taken under the Clean Air Act to remedy adverse visibility impacts. Among other things, the Commission is specifically charged with examining whether areas of the western eight-State region can be defined as "clean air corridors" and whether alternative siting assessments should be required for certain new sources locating in such "clean air corridors." In addition, the Act specifically calls for the Commission's recommendations to address long-range strategies for addressing regional haze in affected class I areas. The Commission's work is managed by the Western Governors' Association. The Commission has established several technical policy

committees which include, among many different groups, members from industry, tribal and local governments, and environmental groups.

To date, the Commission process for addressing the multi-faceted nature of regional transport of pollution has been very successful. The Commission has identified a range of management options for addressing regional haze which includes market-based approaches for reaching visibility targets and incentive programs for reducing emissions causing visibility impairment. The Commission has also approved criteria for evaluating different combinations of these management options, such as their effectiveness in reducing visibility impairment, cost of implementation, energy impacts, equity, as well as social and other environmental effects. The Commission will review specific combinations of these emission management options and, using the criteria, develop final recommendations for EPA by November 1995.

EPA has provided substantial support to the Commission. Much of the technical support has been provided through a major research effort called Project MOHAVE. The study is managed by EPA and the Southern California Edison Company with contributions from the California Air Resources Board, the Electric Power Research Institute, the National Oceanic and Atmospheric Administration, the National Park Service, the University of Nevada Desert Research Institute, and the U.S. Department of Energy. Project MOHAVE represents an effort exceeding $8.5 million. Begun in 1991, the study's primary focus has been to determine the impact of the Mohave Power Project (a coal-fired electric generating station) on visibility in Grand Canyon National Park. EPA and the other study sponsors have since broadened the original study goal to include a field study and assessment effort capable of estimating regional source impacts on the Grand Canyon National Park as well as other nearby class I areas with the specific purpose of assisting the work of the Grand Canyon Commission. The data from this study are still being analyzed and a report is due at the end of this year. EPA and the other sponsors have shared much of the technical knowledge about transport and aerosol

constituents developed under Project MOHAVE with the technical committees of the Commission.

EPA is also modifying the regional acid deposition model (RADM) to more completely address particle concentration and size. This research will expand our capabilities to model the impacts of these emissions on visibility, ozone, and particulate matter concentrations. In addition, we are continuing our support of monitoring in class I areas as part of the Interagency Monitoring of Protected Visual Environments (IMPROVE) program. Since 1987, IMPROVE has deployed monitors to track visibility impairment and related pollutant levels in class I areas. This effort has been expanded to monitor more sites in the East, including state-sponsored monitoring, and has provided technical assistance to states and other countries on appropriate visibility monitoring techniques.

As required by section 169B, when the Grand Canyon Visibility Transport Commission report is submitted to EPA, the Administrator will have eighteen months to address regional haze regulations, taking into consideration the Commission report, other studies and other relevant information. We anticipate the Commission report will provide a framework for addressing regional haze on the Colorado Plateau. That framework may also be suitable to address regional haze problems in other class I areas.

We anticipate that in the Eastern U.S., most of the emphasis at EPA for protecting class I area air quality will be linked to implementation of the acid rain control provisions. I want to emphasize that the key component to making immediate progress on improving visibility and other air quality related values in the eastern class I areas is, first and foremost, full implementation of the Phase II provisions under the Act's acid deposition control program. Only with full implementation will we hope to realize the estimated improvements noted in our report to Congress. However, it is also clear that after full implementation of the acid rain program, there will be the need to develop other programs to assure reasonable progress towards the Congressionally established national visibility goal.

That goal is the prevention of future, and the remedying of existing, visibility impairment in class I federal areas caused by manmade pollution.

EPA has also undertaken several efforts to address difficulties that have arisen when certain new, relatively well-controlled sources in the Eastern U.S. have attempted to obtain start-up permits near class I areas with the largest amount of visibility impairment and other damage to air quality related values. First, EPA has formed a subcommittee of its Federal Clean Air Act Advisory Committee to review issues related to reform of the new source permitting process under the existing prevention of significant deterioration regulations. This subcommittee is comprised of officials from EPA, the National Park Service, the Forest Service, several industry groups, environmental groups, and states. Several subgroups of the subcommittee are reviewing issues raised by federal land managers and others related to the permitting of major sources near class I areas. Among other strategies, these subgroups have examined ways to promote earlier coordination and consultation between the federal land managers and the states. In addition, one subgroup of this subcommittee is looking at alternative programs to address the impact of existing sources on class I areas in a way that would accommodate emissions from new sources. EPA has also cooperated in forming the Southern Appalachian Mountains Initiative (SAMI) to address visibility and other air quality concerns of class I and nearby areas. Supported by EPA grant funds, SAMI was officially formed in November 1993 to address ozone, visibility and acidic deposition concerns in the Great Smoky Mountains National Park, Shenandoah National Park and James River Face Wilderness and surrounding areas. The Initiative brings together states (Georgia, Tennessee, North Carolina, South Carolina, Alabama, Virginia, Kentucky, and West Virginia), federal agencies and representatives from industry and environmental groups to study the technical and policy aspects of protecting the parks and wilderness areas. Currently, SAMI is developing a work plan to guide its technical assessment and policy development. I strongly support this voluntary, regionally-based effort and will be addressing the

Initiative at its semi-annual meeting on May 13th. I hope that, like the Grand Canyon Visibility Transport Commission, the Southern Appalachian Mountains Initiative will help EPA develop an appropriate structure for visibility protection and new source review programs that address class I area concerns in other areas of the country.

EPA is also working in cooperation with the federal land managers to put together a computerized data base which will keep permitting agencies, permit applicants and the general public apprised of technical and policy information regarding the assessment of air quality impacts in class I areas. We expect this data base to be on line within the next two months.

Mr. Chairman, you asked me to discuss our relationship with the State of Virginia regarding various permits that may affect air quality at Shenandoah National Park. EPA has delegated to Virginia the authority to implement the federal permitting program for the siting of new and modified major sources in areas attaining the standards. Our involvement with the State's permit review takes place at the EPA regional office level and has been in the form of general guidance and participation during the public comment period. If a permit is appealed, as has been the case in Virginia, EPA's Environmental Appeals Board hears and decides the challenge. To date, several appeals regarding permits issued to facilities in Virginia have been reviewed by the Board and, prior to its establishment, by the Administrator.

More generally, representatives from the federal land management agencies and the State of Virginia actively participate in the New Source Review reform effort noted above. It is our hope that the reform efforts will lead to improved policy guidance and coordination on class I area issues that will be beneficial to all interested parties in the permit application and review process.

Mr. Chairman, despite the improvements we expect from the various ongoing programs I have described, I believe that additional efforts are needed to address remaining air quality problems in class I areas. These efforts are

consistent with EPA's long-range strategic plan and one of the Administrator's four major priorities, ecosystem protection.

I would like to take a few minutes to outline our plans over the next few years to assure continued progress in protecting and improving air quality in class I areas. In order to be prepared to move as quickly as possible once we have received the recommendations of the Grand Canyon Visibility Commission, we plan to initiate the technical activities needed to analyze the appropriate scope and components of a regional haze rulemaking. The immediate effort will focus on developing the technical tools, such as models and monitoring techniques, for regional planning to address haze in all class I areas. Based on the program recommendations of the Grand Canyon Visibility Transport Commission, when completed in November 1995, and the work of the Southern Appalachian Mountains Initiative, we will consider options for addressing regional haze impairment in all class I areas.

As previously noted, EPA is concerned about ecological effects in class I areas caused by ozone. Such effects include damage to trees and other vegetation, soils, and aquatic systems. To address such damage caused by ground-level ozone (smog) to class I area ecosystems, we will incorporate the technical information relevant to such damage into our ongoing review of the national ambient air quality standard for ozone. It is my intention that the assessment of "welfare" protection, which is the basis for establishing the level of the secondary ozone standard, include the effects of ozone on sensitive ecosystems as well as the effects on crops and forest products. We plan to propose our decision on whether or not to revise the ozone standard in 1996 and promulgate a final decision in mid-1997.

As we develop the visibility regional haze framework and review the ozone studies related to ecosystem damage, full implementation of the next phase of the acid rain control program will be a major step in improving visibility in Eastern class I areas and reducing deposition-related damage.

I have also directed my staff to explore the effectiveness of a short-term (24 hours) nitrogen oxides increment in the prevention of significant deterioration program to address ecosystem effects of nitrogen loading as well as its possible effects on formation of ozone.

Finally, I have asked my staff in each of our program offices to consider protection of class I areas as part of their regulatory activities. By building on existing programs, we may be able to leverage our resources and bring about improvements in class I area air quality sooner than might otherwise occur.

In summary, EPA is now actively engaged on a course to protect visibility and other air quality related values of class I areas. Based on the scientific foundation presented in the NAS Report, we intend to develop the technical tools to address regional haze. In addressing the different regional problems, we plan to bring various constituencies together to explore alternative approaches, including nonregulatory options where appropriate. The Grand Canyon Visibility Transport Commission is well on its way to defining the policies for its region. EPA wants to aid in developing similar mechanisms for other regions to assure that all class I areas are effectively protected. With respect to damage to class I area ecosystems, EPA will continue to aggressively implement its acid rain and ozone regulatory programs and will make every effort to incorporate the latest knowledge into decisions on ambient standards and new source review programs. We will also look for opportunities to build on our other existing regulatory programs to improve air quality in our National Parks and wilderness areas.

Mr. Chairman, this completes my written testimony. As you requested, I have attached to my statement budget information related to protecting air quality in class I areas. I will be pleased to answer any questions you have.

ATTACHMENT

EPA Budget for Fiscal Year 1994 for Programs Addressing Air Quality Protection in class I Areas

Office of Air and Radiation

Grand Canyon Visibility Transport Commission:	
Grants:	250,000.00
Congressional Set Aside:	375,000.00
OAQPS Contract Funds	100,000.00
Southern Appalachian Mountains Initiative:	
Grants:	225,000.00
Congressional Set Aside:	300,000.00
IMPROVE (class I, Multi-Agency Routine Monitoring):	
EPA Portion	900,000.00
Inter-Agency Workgroup on Air Quality Modeling (IWAQM):	
Regional Impact of Single Sources	150,000.00

Office of Research and Development

Project MOHAVE:	420,000.00
CASTNET Visibility Monitoring:	300,000.00
Visibility Impairment Process and Measurement Research	550,000.00

Note: This does not include staff costs associated with these programs, nor does it include budgets for implementing other programs such as acid rain or nonattainment programs that significantly contribute to air quality related protection and improvement in class I and other areas.

Mr. SYNAR. Mr. Frampton.

STATEMENT OF GEORGE T. FRAMPTON, ASSISTANT SECRETARY FOR FISH, WILDLIFE AND PARKS, U.S. DEPARTMENT OF THE INTERIOR, ACCOMPANIED BY WILLIAM C. MALM, NATIONAL PARK SERVICE, FORT COLLINS, CO; JOHN P. CHRISTIANO, CHIEF, AIR QUALITY DIVISION, DENVER, CO; AND MOLLY N. ROSS, SPECIAL ASSISTANT, OFFICE OF THE ASSISTANT SECRETARY FOR FISH, WILDLIFE AND PARKS

Mr. FRAMPTON. Thank you, Mr. Chairman.

Mr. SYNAR. Where is your uniform? I thought you all had to wear uniforms.

Mr. FRAMPTON. Only Park Service professional employees and the Director, Mr. Chairman.

You will notice, I think Dr. Fenn is here behind me in uniform.

I appreciate the opportunity to testify about the activities of the Park Service and the Fish and Wildlife Service regarding air quality in national parks and wilderness areas. Unlike Administrator Nichols, I don't come before you as an expert on these issues, but I thought it was very important for me to represent the Department here for two reasons really.

First is to renew the commitment that Secretary Babbitt began as a private citizen in pushing for stronger provisions in the Clean Air Act to improve the PSD and visibility protection programs, and to make it clear that he really is committed, determined to bring an ecosystem approach to the protection of parks and refuges and that we recognize that air quality issues, air pollution issues are an increasingly important part of those ecosystems because they affect all the resources, and in addition to the natural resources, human health as well.

I am sure if you have been to the Shenandoah recently, you have seen these signs, which perhaps are more appropriate for southern California, warning people about ozone concentrations and indicating the air quality index for the day, and you may have picked up one of these handouts for visitors to Shenandoah National Park which warns that if the ozone rating today is unhealthy, you may wish to refrain from strenuous physical exercise in the park.

[Copies of the sign and handout can be found in the appendix.]

Mr. FRAMPTON. People with respiratory ailments should also limit their exposure by staying indoors, and as you know, Mr. Chairman, there are not a lot of opportunities for that other than staying in your car in the Shenandoah National Park.

The second reason I want to come here today is really to pay tribute to some very committed people in the National Park Service and the Fish and Wildlife Service, who have been working together for a number of years, and who have worked very hard on these issues, and sometimes under somewhat adverse conditions, and have been very courageous, and to promise that we are going to give them even greater encouragement and support. Congress established in the law some pretty high standards for resource protection in parks and wilderness areas, including protection from airborne pollutants, but I think it is fair to say in all honesty, that we have only begun to deliver on that promise.

You have heard today two of the reasons why the PSD program has not perhaps been as effective as it might. One reason is that while the Federal land manager has an affirmative responsibility to be aggressive, ultimately, we are not the regulators.

I think since your 1990 hearings, the Park Service and the Fish and Wildlife Service have been more aggressive, made 10 adverse impact determinations, 9 in the east and 1 the Healy Power Plant outside Denali. But in every case, the States issued or sought to issue a permit nonetheless, rejecting or not agreeing with the land manager's adverse impact determination. So we really need to figure out a way to build partnerships with the regulators, and we need to figure out how to make that role stronger.

I am very heartened by the statements that were made here today by Mary Nichols about her expectations for the new source review reform group, because we are participating in that, and we look forward to that producing some very useful suggestions for EPA.

The second problem with the PSD program, obviously, is that it only deals with a very, very few sources. And I think that the NRC/national academy study, as I read it, basically says what the National Park Service has been saying for years: No. 1, this is a problem that has to be dealt with by looking at a large variety of sources, accumulation of impacts from a variety of sources on a regional basis. And second, that the science is sufficient and the control technologies are sufficient to get on with regional regulation. That is the way I read the report basically.

And while the Grand Canyon Visibility Transport Commission is trying to address these issues on that basis and we support it and we are working with it to the extent we can—although the Park Service does not have a voting membership—we are, quite frankly, concerned about the fact that the commission's program is very ambitious and very expensive, and we are concerned about the November 1995 deadline being met. And in the spirit of streamlining and reinventing government, we have urged the commission to try insofar as possible to use the results of the national academy study to streamline its efforts to try to make sure that that deadline is really met because that is key.

If the deadline isn't met, and then EPA takes another 18 months to look at these issues just for that one region, we will push the development of regional haze regulations and rulemaking back another 5 to 7 years. And we would not like to see that. So we are very heartened with the commitment that has been made this morning by EPA to try to begin to address the things that have to be done to do regional haze regulations. We want to cooperate, we want to assist, we want to be good partners in that, and we will do that to the best of our abilities.

One final note, Mr. Chairman, that hasn't been brought up this morning, we also need to work with our partners across the borders on these issues because increasingly even if we are able to make progress, some of that progress in this country could be offset by emissions from Mexico and Canada. And some of these recent graphic presentations that I have shown—likely emission sources affecting a number of parks and wilderness areas—Acadia National Park, Glacier National Park, Chiricahua National Monument—and

demonstrate that a lot of the sulfate and other emissions are likely coming from across the border, so that is an issue that really needs to be addressed.

[A copy of the briefing statement can be found in the appendix. Photographs referred to cannot be satisfactorily reproduced and are therefore filed for the record in the subcommittee office.]

Mr. FRAMPTON. Actually this is an area where NAFTA gives us a new affirmative tool to help protect the environment. We need to use that aggressively. And for both the Park Service and the Fish and Wildlife Service, there are some new funds being sought for NAFTA in 1995 to address some of these issues.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Frampton follows:]

STATEMENT OF GEORGE T. FRAMPTON, JR., ASSISTANT SECRETARY FOR FISH AND WILDLIFE AND PARKS, DEPARTMENT OF THE INTERIOR, BEFORE THE SUBCOMMITTEE ON ENVIRONMENT, ENERGY AND NATURAL RESOURCES, HOUSE COMMITTEE ON GOVERNMENT OPERATIONS, CONCERNING AIR QUALITY IN NATIONAL PARK AND WILDERNESS AREAS

April 29, 1994

Mr. Chairman, I am pleased to testify today concerning the activities of the National Park Service and the U.S. Fish and Wildlife Service with regard to air quality in national park and wilderness areas designated Class I under the Clean Air Act.

The nation has established in law the highest standards of protection for the resources and ecosystems contained in national park and wilderness areas. The National Park Service Organic Act of 1916 directs that we conserve "unimpaired" the natural, cultural, and scenic resources in parks for the benefit of present and future generations. The Wilderness Act of 1964 directs that we protect and preserve wilderness resources unimpaired, in their natural condition, so that they remain affected primarily by the forces of nature. Collectively, these resources constitute our nation's natural and cultural heritage, a priceless legacy for our children, grandchildren, and all future generations. In developing his agenda for national parks, Secretary Babbitt has made clear that protection of these resources is our highest priority.

One threat to this legacy is air pollution. The currents of air, and the pollutants they bring, do not respect the park and wilderness boundaries painstakingly drawn on maps and marked on the ground. Air pollution can affect virtually all the resources set

aside for protection. It can shroud breathtaking vistas, acidify pure mountain streams, damage vegetation and soils, reduce the diversity of plant and animal life, efface national monuments, and affect the health of visitors. Air pollution can come from sources of all sizes and types--for example, power plants, refineries, smelters, dry cleaners, wood stoves, cars and trucks--located nearby or hundreds, even thousands, of miles away. Perhaps more obviously than in other areas of ecosystem management, the protection of park and wilderness resources from air pollution necessitates the involvement of many outside the boundaries whose actions largely determine the quality of the air within.

Recognizing this necessity, Congress included provisions in the 1977 amendments to the Clean Air Act "to preserve, protect, and enhance the air quality in national parks, national wilderness areas,...and other areas of special...value." In particular, Congress established the Prevention of Significant Deterioration (PSD) program and the Visibility Protection program, and focused the strongest measures of protection on Class I areas, i.e., the larger national park and wilderness areas in existence in 1977. The National Park Service manages 48 Class I areas, and the U.S. Fish and Wildlife Service manages 21 Class I areas.

In the 1990 amendments to the Clean Air Act, Congress confronted the lack of progress being made toward the protection goals set in 1977 for Class I areas, and passed amendments to facilitate

progress toward the national visibility goal.

Mr. Chairman, I applaud your efforts in support of the protection and enhancement of air quality in national park and wilderness areas. I appreciate your conducting this follow-up hearing to your 1990 hearing, to examine the important and difficult issues facing us today. In your letter of invitation sent last week, you asked many specific questions. We have provided your staff with a notebook of information in response to these questions and related matters. It should be noted that, since the material in the notebooks has not been reviewed within the Administration it does not necessarily reflect the Administration's clean air policies. I shall focus the remainder of my testimony on key developments since March 1990, and critical issues facing us now.

PSD Developments and Issues. In its 1990 report, the GAO observed that the National Park Service had rigorous standards for determining that a major new source would have an adverse impact on Class I resources. For this and other reasons, the Park Service had not made any adverse impact determinations at the time this Subcommittee held its first hearing in March 1990. This situation changed radically, however, later that year, after the Park Service became aware of numerous permit applications for new power plants in the vicinity of Shenandoah National Park, whose overall pollution levels top most other Class I areas.

Prompted by this situation, the Department of the Interior published a Federal Register notice on September 18, 1990, finding that air pollution is causing adverse impacts on the visibility, streams, and vegetation of Shenandoah National Park. On February 5, 1992, the Department published a similar Federal Register notice for Great Smoky Mountains National Park. In these notices, the Department stated generally that proposed emissions primarily of sulfur and nitrogen oxides associated with major new sources within 120 miles of these parks were likely to exacerbate these adverse impacts. The Department requested that the permitting authorities require emission offsets and other appropriate measures to assure that these sources would not contribute to adverse impacts on Class I resources. Since 1990, the Department has made source-specific adverse impact determinations in approximately 10 cases--8 proposed power plants near Shenandoah National Park, 1 proposed industrial boiler near Great Smoky Mountains National Park, and 1 proposed power plant near Denali National Park.

In all these cases, however, the State, as permitting authority, has issued PSD permits to the sources despite the Department's objections. The Department appealed the States' issuance of PSD permits in two instances. In one case, the Superintendent of Shenandoah filed an appeal concerning Virginia's issuance of a permit for the Multitrade cogeneration project despite the Federal Land Manager's adverse impact determination. In the other case, the Department filed an appeal on behalf of the U.S. Fish and

Wildlife Service concerning Florida's issuance of a permit for the IMC fertilizer facility, which the Fish and Wildlife Service alleged would violate the Class I increment for sulfur dioxide at Chassahowitzka National Wildlife Refuge (wilderness area). In the only adverse impact determination since the current administration took office, the Department appealed Alaska's issuance of a permit for a new coal-fired power plant next to Denali National Park.

In several cases where the Department had made an adverse impact determination, environmental groups have pursued the issues on appeal with or without the Federal Land Manager. In one such case, the Southern Environmental Law Center (SELC) obtained an important decision from the Environmental Protection Agency's newly established Environmental Appeals Board, remanding to Virginia the permit issued to Hadson Power Company for the Buena Vista power project.

The Department has negotiated several agreements to resolve its concerns about PSD permits. Given the States' disagreements with the Federal Land Manager's adverse impact determinations, negotiated agreements appear to provide an opportunity at the present time for the Federal Land Manager to secure from the proposed major source superior control technology, emission offsets, and post-construction research and monitoring. In certain cases, such as the AES-Warrior Run Cogeneration Plant in Maryland, the Department and the permit applicant worked together

successfully before the permit's issuance. In other cases, including the Old Dominion Electric Cooperative's Clover project and the SEI Birchwood power facility, both in Virginia, the Department reached agreements after submitting final adverse impact determinations. In yet other cases, such as the Multitrade cogeneration project in Virginia, the Healy project in Alaska, and the IMC fertilizer facility in Florida, the Department and the permittee reached agreement only after an appeal had been filed.

Having reviewed over 450 permits affecting park and refuge areas since 1978, we believe that PSD new source review is an important Class I area protection tool to assure that new sources do not cause or contribute to specific air pollution problems. We also recognize, however, that PSD has serious limitations. EPA is committed to pursuing other measures to address the sources of emissions which create visibility impairments in Class I areas.

For these reasons, we are involved in efforts both to improve PSD and to move beyond PSD. To improve PSD, the National Park Service and the U.S. Fish and Wildlife Service are participating in EPA's New Source Review Reform efforts as well as the Interagency Workgroup for Air Quality Modeling (IWAQM). To move beyond PSD, the National Park Service is participating with EPA, the Forest Service, eight southeastern States, and a variety of other stakeholders in the Southern Appalachian Mountain Initiative (SAMI), whose mission is the following:

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Through a cooperative effort, identify and recommend reasonable measures to remedy existing and to prevent future adverse effects from human-induced air pollution on the air quality related values of the Southern Appalachians, primarily those of the Class I park and wilderness areas, weighing the environmental and socio-economic implications of any recommendations.

We will try to ensure that New Source Review Reform and SAMI will produce measures that will improve protection for Class I area resources. However, the negotiations are difficult, and the abilities of the various interests to participate are not equal. In addition, these efforts are voluntary and advisory, and have no mandatory deadline or outcome.

Visibility Protection Developments and Issues. Although the 1990 GAO Report did not focus on visibility issues, Mr. Chairman, you asked about these issues during the March 1990, hearing, and subsequently asked GAO to focus their efforts on these issues. I shall summarize matters relating to the Navajo Generating Station, the Grand Canyon Visibility Transport Commission, the National Research Council's visibility report, and our thoughts on regional haze regulations.

Based largely on the National Park Service's technical analyses, the EPA promulgated a rule on October 3, 1991, to require the

installation of pollution controls at Navajo Generating Station, a 2,250 megawatt coal-fired power plant in Page Arizona, to achieve a 90 percent reduction in sulfur dioxide emissions. The final rule, consistent with an agreement reached by the principal parties, provides greater visibility protection for the Grand Canyon and the many nearby Class I areas, and at a lower cost, than EPA's initial proposal. The U.S. Court of Appeals for the Ninth Circuit upheld EPA's final rule in a 1993 decision.

To address other sources of visibility impairment in the Grand Canyon region, the Clean Air Act Amendments of 1990 required EPA to establish the Grand Canyon Visibility Transport Commission. The Commission's charge is to assess visibility impairment affecting the Grand Canyon and 15 other parks and wilderness areas on the Colorado Plateau, and make recommendations to EPA by November 1995, as to what measures, if any, are needed to remedy existing and prevent future impairment of visibility in these specially protected Class I areas. The National Park Service has a non-voting seat on the Commission, and actively participates on the various committees.

While we support the Commission's goals and efforts, we also recognize the challenges before it. The Commission has produced an ambitious work plan, and will soon publish a prodigious request for proposal to perform an assessment of visibility management options. As with SAMI and New Source Review Reform, the abilities of various

stakeholders to participate in all the meetings, analyses, and reviews, are not equal. Nevertheless, the Commission provides the States in the region an opportunity to contribute valuable information and recommendations to EPA. Under the Clean Air Act, the ultimate responsibility for effectuating the visibility protection provisions remains with EPA.

We have strongly recommended to the Grand Canyon Visibility Transport Commission that it streamline its work plan and assessment by relying to the fullest extent possible on the excellent work performed by the National Research Council of the National Academy of Sciences in its 1993 report on Protecting Visibility in National Park and Wilderness Areas (NRC Report). The NRC Report notes that visibility--"the ability to look out over great vistas to see shapes and colors with crystalline clarity"--is "at the heart" of the park and wilderness experience. The NRC Report confirms the fragility of the visibility resource as well as its seriously damaged state, with average annual visual range in the West diminished to about one-half to two-thirds of natural visual range, and average annual visual range in the East diminished to about one-fifth of natural.

The NRC Report states that "visibility impairment is probably better understood and more easily measured than any other air pollution effect." The NRC Report notes the lack of progress in implementing Clean Air Act programs to protect visibility and

particularly regional haze, "despite major advances in monitoring techniques, regional scale models, and scientific knowledge...." The NRC Report also finds that other Clean Air Act programs "will not solve the nation's visibility problem." In fact, despite the 1990 Clean Air Act Amendments, the NRC Report states that sulfur dioxide emissions--a major cause of visibility impairment--are likely to increase through 2010 in the West, where the visibility resource is particularly valuable and vulnerable. EPA has recently provided its own projection in an October 1993, report to Congress. Having modeled estimates of emission changes through 2005 affected by the implementation of the 1990 Clean Air Act Amendments, EPA concludes that the visibility in the Class I areas of the rural Southwest will not change perceptibly.

The NRC Report includes the following excellent recommendations:

- To make progress toward the Clean Air Act's visibility protection goal "will require regional programs that operate over large geographic areas and limit emissions of pollutants that can cause regional haze."

- These programs should "consider <u>many</u> sources simultaneously on a regional basis." Although determining the contribution of <u>individual</u> sources may be helpful in certain circumstances (such as assessing the impacts of a proposed major new source), the NRC Report

warns against relying more heavily on programs focused on determining individual source contributions. Such programs are "extremely time-consuming and expensive" and subject to "considerable uncertainties."

- Scientific models to design the regional visibility programs "are available today." The NRC Report recommends that regulators use a nested progression, employing the simpler and more direct models to design regional visibility programs, and turning to the more complex and detailed models to refine the programs over time.

- Important differences between the visibility problem in the West and in the East may necessitate different approaches.

- Efforts to improve visibility in national parks and wilderness areas will also improve visibility in other areas. Such efforts could also help reduce certain air pollution effects on human health and the environment caused by the same pollutants.

- Protecting visibility will require a "substantial, long-term program."

Significantly, the NRC Report concludes: "Current scientific knowledge is adequate and control technologies are available for taking regulatory action to improve and protect visibility." The NRC Report makes several recommendations for additional research, but states that such research is not a pre-requisite to the recommended regulatory program.

Mr. Chairman, the NRC Report's findings and recommendations concerning regional haze regulations validate the recommendations made by the National Park Service since the mid-1980's. In fact, EPA has recently decided to consider regional haze regulations. We will continue to work closely with EPA staff on these matters.

Departmental Program Issues. In the final part of my testimony, I shall highlight air quality program matters with respect to the U.S. Fish and Wildlife Service, the National Park Service, and the National Biological Survey.

In 1983, before "reinvention" and "partnerships" were management buzzwords, the U.S. Fish and Wildlife Service and National Park Service entered an interagency agreement, still intact, to centralize a team of experts that could efficiently and effectively provide technical support to the respective bureaus and to the Assistant Secretary as Federal Land Manager for the Department's Class I areas.

With the establishment of the National Biological Survey, this administration aims to enhance the technical support and broaden the partnerships in the area of air pollution effects on biological resources. The National Biological Survey has established a national air quality research program associated with the Survey's National Ecology Research Center in Colorado. At present, the program involves air quality specialists transferred from the National Park Service. In air quality decision-making arenas, the science plays a central role in determining policy and regulatory measures. Over time, therefore, the Department will increasingly rely on the National Biological Survey to provide the bureaus and the Federal Land Manager information on pollution effects in Class I areas nationwide.

As I reviewed the 1990 GAO report and hearing transcript, I realized that this Subcommittee would probably appreciate some good news about the Fish and Wildlife Service's air quality program. I can assure you that I have a more positive report today. Since 1990, the Service's Air Quality Branch has increased from two to five people, and has developed an "Air Quality Management Plan" to define the needs of the Service's 21 Class I areas, including monitoring, resource inventories, data analysis, regulatory strategies, and permit review. With a budget initiative in FY94 increasing the funding to $651,000, the Service has started to implement the highest priority needs set forth in the plan. Details about the Service's efforts appear in the materials

provided to the Subcommittee.

The National Park Service's Air Quality office continues to provide excellent service. Largely because its information and expertise are in high demand, the workload of this office has increased. Examples of this increased workload include representation on various regional and national initiatives, such as the Grand Canyon Visibility Transport Commission, the Southern Appalachian Mountain Initiative, and New Source Review Reform, discussed above; as well as representation in several international efforts, such as discussions concerning certain large new power plants in Mexico, general air quality matters along both the Mexican and Canadian borders, and implementation of the 1991 United States-Canada Air Quality Agreement. The National Park Service is currently engaged in a "streamlining" process, whose primary purpose is to strengthen Park Service program management, resource protection and visitor services, and Service-wide science and technical support functions. I am confident that this management review will recognize the value of the Air Quality office and the functions it serves.

In October 1993, the Director of the National Park Service and the Regional Directors of the five Park Service regions east of the Mississippi River announced the "CLEAR" (Clearer Look at Eastern Air Resources) Strategy "to initiate actions that preserve and protect the air resources in all eastern National Park System units." The CLEAR strategy identifies examples of immediate,

short-term, and long-range actions that can be implemented by parks, typically working with others, toward the goal of improving eastern air quality and reducing the widespread impacts on park resources.

This completes my testimony. I will be pleased to answer any questions you may have.

Mr. SYNAR. Thank you, Mr. Frampton.

We thank all three of the panelists.

Ms. Backiel, let's start with you if we could.

First of all, I want to say how glad I am to see the Forest Service is back on track to complete the inventory of the resources in its class I areas by the year 2000. At least we have something going.

At the last hearing, not one forest had been inventoried, so while 6 years seems like a long time to us, at least you are making progress. So I want to give you that accolade right off the top.

Ms. BACKIEL. Thank you.

Mr. SYNAR. Now, the Forest Service found adverse impact would result from the granting of five PSD permits by the State of Virginia. These permitted sources were all fairly close to the James River Wilderness Area; is that correct?

Ms. BACKIEL. My understanding is that it was three.

Were there five?

Three adverse determinations.

Mr. SYNAR. All right.

These permits were also the source of adverse impact determinations by the Park Service; right?

Ms. BACKIEL. They are the same ones, I would believe so.

Mr. SYNAR. Didn't the Forest Service approach differ somewhat from the Park Service? For example, your determination quantified effects on aquatic resources from acidification of streams?

Ms. BACKIEL. Yes, sir, that is correct.

Mr. SYNAR. All right. Could you describe how you determine that forest resources could be damaged by the new plant?

Ms. BACKIEL. Yes, we could, but what I would like to do is have one of my technical experts with me please answer that question.

Mr. SYNAR. That is fine. Have him identify himself.

Mr. MCCLEESE. My name is William McCleese, I am Acting Associate Deputy Chief for the National Forest System.

We determined the effects, the potential effects of air pollution based on the information that was provided by the appellant and then through analysis of water quality samples that came from the area that would be affected in the wilderness.

Mr. SYNAR. OK.

Now, we will go back to Ms. Backiel.

You have very few personnel doing this work, but you have the largest number of class I areas. How much help do you get from the other agencies seated at the table here?

Ms. BACKIEL. I believe our working relationships with the other agencies are excellent. We collaborate on many efforts. A lot of that is the sampling techniques that we have. We do that in visibility, we do it in other aspects as well.

Mr. SYNAR. Now, these three Virginia permits we have been talking about; the Multitrade, the Old Dominion Electric Cooperative, and the Hadson Power 14, are the only adverse impact determinations the Forest Service has made out of the 240 new source reviews you have done in the last 5 years, other than the special situation for Mt. Zirkel; is that correct?

Ms. BACKIEL. I don't believe so, Mr. Chairman.

Mr. MCCLEESE. We did make one other adverse in New York with the half moon project.

Mr. SYNAR. Why didn't you choose to issue adverse impact determinations on all nine plants in Virginia that you examined?

Mr. MCCLEESE. We didn't have what we considered to be enough information to substantiate an adverse finding on some of them. In others we were able to work with the applicant, and they voluntarily reduced their emissions so that eliminated the problem.

Mr. SYNAR. Are you confident in your modeling?

Mr. MCCLEESE. We believe that the modeling reflects the best science that is available.

Ms. BACKIEL. Mr. Chairman, as I said in my testimony, too, we would also like to see some longer-range modeling for air pollution transport over and above what we have got now.

Mr. SYNAR. In light of the efforts you have made to show this adverse impact, and the fact that the permits were issued anyway, do you think there was any kind of showing that would have satisfied the State of Virginia?

Ms. BACKIEL. In one of the three cases, the applicant withdrew the application. The other two cases, I believe the plants have started to be built. We feel that our case was substantive. I don't know if we could have really had much more detail involved in our response.

Mr. SYNAR. The bottom line is that the States are in charge; aren't they?

Ms. BACKIEL. Yes, sir.

Mr. SYNAR. Would you describe the Forest Service's data review screening and how it is used?

Mr. MCCLEESE. Are you referring to the air quality related values?

Mr. SYNAR. Yes.

Mr. MCCLEESE. We first determine for each wilderness area what those sensitive values are that could be affected by air pollution, and then we do monitoring to determine whether or not——

Mr. SYNAR. How do you set priorities through the system? How do you pick which permits are more important than others?

Mr. MCCLEESE. You mean in the PSD review?

Mr. SYNAR. Right.

Mr. MCCLEESE. We look at the conditions that are existing in the wilderness to determine which ones are most sensitive and which ones would be most heavily affected.

Mr. SYNAR. Do you have enough resources to set priorities?

Mr. MCCLEESE. It is hard to say whether we ever have enough.

Mr. SYNAR. If you don't have the resources some important areas may be missed.

Mr. MCCLEESE. We do not have the resources to intensively evaluate every PSD permit.

Mr. SYNAR. All right.

I want to move on to discuss Mt. Zirkel, because I think it is a unique place. Where is Mt. Zirkel first?

Ms. BACKIEL. It is in the Routt National Forest in north central Colorado, and I would like to invite Dennis Haddow who is from Colorado and who is our Air Quality Program Manager there in Colorado.

Mr. SYNAR. I am told we are going to see some slides on this.

Ms. BACKIEL. If you would like to see them, sir, yes.

Mr. SYNAR. Yes, go ahead.

[Copies of the slides can be found in the appendix.]

Mr. HADDOW. Mt. Zirkel is in northwest Colorado. It borders the Continental Divide, it is a 140,000-acre area.

This is a view in Colorado or in Mt. Zirkel or just along the west edge of Mt. Zirkel. It indicates visibility on a good day.

We have had anecdotal evidence or comments from the public that we were having visibility impairment in the wilderness. We, in conjunction with EPA and the State of Colorado, put a visibility monitor in that area, and we did show visibility impairment. Sometimes just a thin-layered haze, other times we could see what we thought was definite layered haze going into the wilderness, which was a very definite concern to us, along with some days the whole area looks just like this, which is—this does not happen very often, but it does happen occasionally, and it is something we are extremely concerned about as far as visibility impairment.

Mr. SYNAR. Who did the background work on this?

Mr. HADDOW. We, the Forest Service, and the State of Colorado, collected the information, all of the slides were analyzed by the contractor that does all the visibility slides nationwide.

Mr. SYNAR. Is this an expensive process?

Mr. HADDOW. No, it is not.

Mr. SYNAR. Go ahead.

Mr. HADDOW. OK.

Based on this information, plus the information we had on aquatic ecosystems—and I will switch up to here, let me see—plus we do have two large coal-fired power plants just up wind.

Mr. SYNAR. What plants are those?

Mr. HADDOW. The Craig and Haydon Power Generation Stations. One of those stations, the Haydon Power Generation Station, is totally uncontrolled for sulfur dioxide and very poorly controlled for particulates. This source is——

Mr. SYNAR. So one has no controls and the other one little?

Mr. HADDOW. The Craig plant does have sulfur dioxide controls. They could be better, but they do have some sulfur dioxide controls. The Craig plant is about 40 miles away, the Haydon plant is about 20 miles away. Between those two sources, they emit 99.6 percent of all sulfur dioxide in northwest Colorado.

Based on that information, plus information I will show in just a moment here relative to what we are doing with lakes, we do have, I will say, quite a few lakes in that area that are extremely sensitive, even small additions of sulfate and nitrate, many of these lakes have alkalinity as low as 10 microequivalents per liter. The EPA has said anything with an alkalinity of less than 200 microequivalents is extremely sensitive. It would take 1/20th as much sulfate and nitrate to change the chemistry of this lake as one EPA is normally concerned about.

We are monitoring deposition in that area. We get 12- to 14-foot of snow, we have gone in and done quite a bit of snow sampling, looking at snow pits and come up with some very interesting information. If you look at sulfate in snowpack, in that area we pick up the most of anywhere in the State.

The same situation with nitrate, and if you add the sulfate and nitrate and then subtract the basic cadmiums, you look at total

acid deposition in snowpack. We are monitoring about 2½ times higher than anywhere else in the State in that area. It has been our determination that the amount of precip or the amount of hydrogen ion concentration that we are monitoring there is probably causing impacts to our most sensitive aquatic ecosystems.

So based on this information and the visibility information, our emission inventory information, and some modeling that was done, we felt it was reasonable to believe that those two power plants were causing or contributing to adverse impacts in the wilderness.

One other thing that I will show——

Mr. SYNAR. How do those plants contrast with the ones that are regulated?

Mr. HADDOW. OK, there are plants in Colorado and many other States that are much better controlled, even in Wyoming.

Mr. SYNAR. New plants can be controlled up to 90 percent; can't they?

Mr. HADDOW. Yes, they can.

Mr. SYNAR. These aren't, though?

Mr. HADDOW. That is true.

Mr. SYNAR. Go ahead.

Mr. HADDOW. OK.

I wanted to mention this one slide very quickly—if you look at sulfur isotopes, the ratio between sulfur 32 and sulfur 34, you can determine perhaps where that sulfur is coming from, is it regional in nature. The industry said, that is all the sulfur in all of the whole Western United States funneled through the Yampa Valley, and we determined that is probably not the case.

By looking at sulfur isotope ratios, it appears to be a very localized source of sulfate causing that impact in that area. Based on that, we did certify impairment to the Governor and are moving ahead on a reasonable attribution study.

Mr. SYNAR. Thank you for that.

Now, Ms. Backiel, if you convinced the State to go along, how long will it take you to get BART controls applied?

Ms. BACKIEL. Do you know, Dennis?

Mr. HADDOW. Currently, we are working with the State of Colorado to determine, to finish a reasonable attribution study, and we are trying to work cooperatively, but we are getting——

Mr. SYNAR. Who is financing that study?

Mr. HADDOW. To date, all of the work that has been done has been financed by the State and EPA, USGS has put dollars into that. We are hoping that industry will put money into that—oh, and the Forest Service.

Mr. SYNAR. How long will it take you to put the controls in place if you get an agreement?

Mr. HADDOW. OK, to finish the study, if we get an agreement, we are hoping that it can be done within 2 years under the State process.

Mr. SYNAR. OK. Where are we right now? It is a political football out there. Where is the football right now?

Mr. HADDOW. The situation right now is that we are trying to work cooperatively to set up a study plan, but there have been bills introduced into the Colorado Legislature which would make it difficult, if not impossible to finish the study.

Mr. SYNAR. Wouldn't it require every potential source in the State to be studied before an action could be taken?

Mr. HADDOW. Not only inside Colorado but outside Colorado, at least that is one proposal.

Mr. SYNAR. So in other words, they would never do it?

Mr. HADDOW. That is very possible.

Mr. SYNAR. Well, are you likely to try more BART cases in the future, given your experience here?

Ms. BACKIEL. I think that really depends on a case-by-case situation. I would certainly feel that if we have the substantive data behind us that, yes, we would be moving ahead with that information.

Mr. SYNAR. The fact is that unless you have cooperation with the States, you are dead in the water on this; aren't you?

Ms. BACKIEL. The collaboration is absolutely essential for successful implementation of these provisions, yes.

Mr. SYNAR. I hope Colorado is listening.

Let me go to you, Mr. Frampton, if I could.

I want to first of all tell you, I know that the superintendent at Shenandoah National Forest and the people down there have taken a heck of a lot of political heat. This is one Congressman that is very proud of the service they are doing.

You can pass the word along. We know what they are trying to do and it hasn't gone unnoticed. We do appreciate them and I think sometimes we don't compliment your people when they do a good job.

Mr. FRAMPTON. Thank you.

Mr. SYNAR. Before I go to the questions, does the Department of Interior wish to comment on the testimony of Professor Michaels and the other witnesses that we had up here?

Mr. FRAMPTON. Mr. Chairman, I am here with John Christiano, who is the head of the Air Quality Division, and a number of his staff members, and I think at your request, Dr. William Malm is available to respond.

Mr. SYNAR. Do you have any brief comments on what Mr. Michaels said?

Welcome back, Mr. Malm, nice to see you again.

Mr. MALM. Mr. Michaels, as I understand it, responded to a statement made by the Shenandoah staff that visibility has decreased from the 1950's to current conditions very significantly. In fact if you look at the data, and the data has been reported widely by HUSAR, and it is in the State of Science NAPAP reports, the data shows that from 1940 to 1970, the visibility went from about 120 to 150 miles, which was suggested by the cleanest photographs you saw of Shenandoah up there, to about 6 to 10 miles.

Mr. SYNAR. How far?

Mr. MALM. 120 to 150 miles is what——

Mr. SYNAR. To 6 to 10 miles?

Mr. MALM. That was in about 1940, 1945 to 6 to 10 miles, and this is summertime as opposed to wintertime. That 120 to 150 miles is also consistent with John Trijonis's estimates of natural conditions. In other words, natural conditions would yield about 120- to 150-mile visual range. That also is reported in the State of Science report of NAPAP.

If you look at his data, his data starts in 1960 and goes to 1990, and the data that he shows is really consistent with the data that we have at the park. The trend is that from 1940 to 1970, visibility became worse from that 120 to 150, to 6 to 10, then from 1970 to 1980, it actually improved, and from the 1980's to current conditions, it has gone back down to what it was in 1970.

The data that we have at the park at Shenandoah, the sulfate data and the sulfates, by the way, demonstrates that it is not vegetation and all these other things that Mr. Michaels suggested might be causing the degradation.

Mr. SYNAR. Killer trees?

Mr. MALM. Not killer trees. In the summertime, sulfates make up about 70 percent of the visibility impairment, on the average. It can be higher, it can be lower, but on the average, 70 percent sulfates, the precursor being sulphur dioxide emissions mostly from power plants. That has also been shown historically to be the trend, the relationship between SO_2 emissions and reduced visibility. In any case, visibility improves between 1970 and 1980, and afterwards visibility decreases again to current conditions.

Our sulfate data in Shenandoah shows the same trend. We only have data from 1983 to 1993. From 1983 to 1993, we show an increase in sulfate. And that is consistent, for instance, with the Lynchburg data which shows that the visual ranges have gone from a high in 1980 and now back down to what they were in the 1970's.

[Subsequent to the hearing, the Department of the Interior submitted clarification on this issue in a letter dated July 8, 1994, which can be found in the appendix.]

Mr. SYNAR. Thank you for that explanation.

Mr. Frampton, clearly visibility is important, but why isn't it on your list of 12 points for renewing parks?

Mr. FRAMPTON. On our list of—sorry?

Mr. SYNAR. Your list of 12 points for renewing parks. It is not even on that list.

Mr. FRAMPTON. Well——

Mr. SYNAR. If it is so important, why isn't it a high priority in the top 12?

Mr. FRAMPTON. Mr. Chairman, I don't know what you are referring to.

Mr. SYNAR. It is the Secretary's 12-point program for renewing the national parks.

Mr. FRAMPTON. Well, we have been involved over the last 3 or 4 months in developing a parks initiative for the administration which is not completed yet.

Mr. SYNAR. Well, first of all, it is not one of your high priorities according to your own director.

Let me ask you this, why has the Park Service abandoned such a large percentage of the air quality monitors?

Mr. FRAMPTON. Well, Mr. Chairman, I will ask Mr. Christiano to respond to that.

But let me say that on the budget issue, that the figures that I have indicate that over the last 5 or 6 years the total budget, Park Service and Fish and Wildlife Service—and now a small piece of that went to National Biological Survey for the Air Quality Divi-

sion—have remained approximately the same. We are looking at——

Mr. SYNAR. I am more interested in the number of monitors.

Mr. FRAMPTON. What has happened is that more of that funding has gone into personnel costs, and in the last 2 years the operations portion of the budget, which is what supports the monitoring, has gone down, and so the major area that has taken a hit is the monitoring.

Mr. SYNAR. Why? Why did you do that?

Mr. CHRISTIANO. My name is John Christiano. I am Chief of the Air Quality Division at the National Park Service.

Our monitoring budget is approximately 80 percent of our division budget excluding personnel. Anytime we have increases in personnel costs, cost-of-living increases, those kinds of things, it has to be offset someplace in the budget.

Mr. SYNAR. How did the biological survey affect your air quality?

Mr. CHRISTIANO. We had two FTEs that went to the biological survey and about half a million dollars.

Mr. SYNAR. Did you request money to maintain your level of monitoring?

Mr. CHRISTIANO. I did through the Park Service process. I am not sure how well—obviously, it didn't compete well with other priorities the Park Service had.

Mr. SYNAR. Did it survive?

Mr. CHRISTIANO. We did not receive an increase.

Mr. SYNAR. On June 4, 1993, David Carr, who you saw testify earlier, sent you a letter with a list of options for addressing the air pollution problems in the Great Smoky Mountains National Park and the Shenandoah National Park. Aside from addressing the regional haze, the letter went on to suggest that you meet with EPA to develop a joint strategy, carry out your responsibilities, and recommended including forming a task force to protect air-related values. Have you created that task force?

Mr. CHRISTIANO. Well, we do meet with EPA regularly, we work very well with our colleagues at EPA. We have done—we are participating in the new source review task force, we are participating in SAMI initiative, all of which EPA is involved with.

Mr. SYNAR. I want to pin you down. Is there a task force or you are just meeting with them on air quality related matters, on air quality related values?

Mr. CHRISTIANO. I am not sure if you would define it as a task force. We have biweekly phone calls at least with other Federal land management agencies and EPA, and are working together to try to establish common——

Mr. SYNAR. Do you think this task force might be helpful given what we have heard today?

Mr. CHRISTIANO. Cooperating with other agencies certainly has helped, I think.

Mr. SYNAR. Mr. Frampton, how does the Park Service decide when to issue an adverse impact determination?

Mr. FRAMPTON. How does it decide when to do that?

Well, I would let Mr. Christiano respond to that, too.

Mr. CHRISTIANO. Thank you.

We have monitoring information in a number of our parks both on gaseous pollutant and visibility pollutants.

Mr. SYNAR. Is there a formula called "significant factor" and if it is tripped, you find an adverse impact?

Mr. FRAMPTON. We have a working definition of an adverse impact, and those are if it would affect the national significance of the area, if it would——

Mr. SYNAR. Isn't that the way you do it?

Mr. CHRISTIANO. Yes.

Mr. SYNAR. How many times did that thing trip?

Mr. CHRISTIANO. I think we have talked about——

Mr. SYNAR. Fewer than 1 dozen out of 100; right?

Mr. CHRISTIANO. That is probably appropriate. We review between 20 and 40 permits a year for both Fish and Wildlife Service and Park Service areas. Many of these are for sources that are quite distant from parks or are extremely well-controlled. We do the analysis of the best available control technology and provide comments to the State agencies no matter how far away they are, as far as that goes, because we have, I think, been very successful in getting——

Mr. SYNAR. Is that why in 1990 you issued a blanket determination of adverse impact regarding Shenandoah instead of proceeding on a case by case?

Mr. CHRISTIANO. We determined at that point that we had enough information that the existing conditions at Shenandoah were such that we probably couldn't tolerate any additional insult to the environment there.

Mr. SYNAR. Now, the State of Virginia, as we have learned today, has overruled your permit objections numerous times. Do you realistically think there is any way we can convince them of the adverse impact?

Be honest. You are under oath.

Mr. CHRISTIANO. I understand that.

I think the weight of evidence that we are putting together ought to be able to convince them.

Mr. SYNAR. Why didn't you appeal in cases like Hadson Buena Vista when they were overruled by Virginia?

Mr. CHRISTIANO. I am going to defer to Molly Ross on this issue. She is much more detailed and has got much more information on the details of these transactions.

Mr. SYNAR. Molly, what is the answer?

Identify yourself for the record.

Ms. ROSS. My name is Molly Ross, I am a Special Assistant to Assistant Secretary Frampton, but I served as the Assistant Chief of the Air Quality Division during 1984 to 1993, and I was on the scene in Washington.

The Assistant Secretary and the Superintendent of Shenandoah had recommended filing an appeal of the Hadson permit based on deep concerns about that permit. A decision was made at the departmental level not to allow the filing of that appeal.

Mr. SYNAR. Is it safe to assume it was political pressure in the last administration?

Ms. ROSS. Perhaps a different way of doing things.

Mr. SYNAR. Since the Department's string of defeats by Virginia, aren't you trying to negotiate things out instead of issuing adverse impact determinations? Are you at all trying to work this out, Molly?

Ms. ROSS. Yes, we are. We tend to be able to work earlier with sources. We have been able through a lot of negotiations to get stronger emission controls, in some cases, offsets, post-construction research and monitoring, so the approach right now is through negotiated agreement. We don't have the regulatory support yet to require those terms and conditions.

Mr. SYNAR. Are you getting any reduction in emissions based on these negotiations?

Ms. ROSS. Yes, we are.

Mr. SYNAR. How successful has the Department been in getting new plants to obtain offsets that you just mentioned?

Ms. ROSS. We have had a few successes, but there are many failures to achieve offsets.

Mr. SYNAR. I hate to ask this because I sat through 20 hours a day for 6 months; do we have to go back and amend the Clean Air Act to clarify this offset?

Ms. ROSS. I think that some recent decisions by EPA and the ongoing new source review reform efforts might provide opinions that there is authority in existing law to require those kinds of offsets to protect class I areas.

Mr. SYNAR. In February 1992, the Department of Interior announced that it intended to issue a blanket determination for the Great Smoky Mountains National Park similar to the one in Shenandoah. Why hasn't the final version of that notice ever been made?

Ms. ROSS. That Federal Register notice was issued on February 5, and immediately became very controversial. The comments that we received in the 30-day comment period were 95 percent opposed to our adverse impact determination. The Department became very concerned about this approach and the controversy that it was causing and preferred at that point to go forward on a case-by-case basis, and in fact——

Mr. SYNAR. I am an equal opportunity abuser, fair is fair. It was political; wasn't it?

Ms. ROSS. Some would call it that. However——

Mr. SYNAR. We are just rearranging the chairs on the Titanic here; aren't we?

Ms. ROSS. To be fair, the Clean Air Act in the PSD review does call for a case-by-case determination which we do perform, and that is the way we are proceeding.

Mr. SYNAR. That furor that you just described, that was what led to the founding of SAMI; wasn't it?

Ms. ROSS. I think our comments also helped to lead to that. We were making adverse impact determinations even in those times, but we recognized that it wasn't the new sources that were causing the adverse impacts. In fact, it was existing sources, and the best approach was to look widebased, regionally, and to look for the most cost effective and efficient solutions looking at all the sources out there and seeing how we could improve the situation.

Mr. SYNAR. Well, one of the concerns of SAMI and the Grand Canyon Visibility Commission is that they have been accused of being captured by industry. How do you ensure that doesn't happen?

Mr. Frampton.

Mr. FRAMPTON. I will respond to that.

Mr. SYNAR. Throw that hand grenade in there.

Mr. FRAMPTON. I think your dialog with Mr. Souby was instructive because in terms of looking at these issues, it is clear that given existing authorities, partnerships are essential, it is clear that you have to have some kind of buy-in by a number of interests, and it is clear that you have to have a firm scientific basis. I don't know any other way to approach that other than trying at this juncture to make these processes like SAMI and the Grand Canyon commission work.

It doesn't mean they are the ultimate solution. We are trying to make them work.

Mr. SYNAR. The problem is, Mr. Frampton, there is no deadline, there is no formal charge, there is no requirement to produce anything, it is totally voluntary. I mean, isn't the bottom line the best way to deal with Shenandoah and deal with the Great Smokies is to do the regional haze requirements in a more formal organization? Isn't that the way to go?

Mr. FRAMPTON. Well, I think what you have heard today is a commitment from the EPA with encouragement from various other departments and agencies to look at how we pursue aggressively these regional commission approaches, but at the same time, to at least get ready and structure regulations, and to look at these things proceeding on a parallel track which also gives obviously the commissions a very important incentive.

In other words, if the Grand Canyon commission knows that it has to get its report done on time at the end of 1995, to have its findings and its recommendations considered in an ultimate regulatory scheme, that provides an enormous incentive for that commission to be more effective, and I think the same thing could be said of the Southern Appalachian Mountain initiative. So right now what we are saying to you, I think, is that we want to pursue these things in tandem and each should provide good information and incentives for the other track to proceed effectively.

Mr. SYNAR. All right.

Before I let you out of here, I have got to ask you about something that is of deep concern to myself and a number of my colleagues.

Mr. FRAMPTON. Not grazing, I hope.

Mr. SYNAR. No, I have given up on you all on that. I want to talk about Healy plant in Alaska. I am annoyed about this plant since it was built partially with taxpayers money under the Clean Coal Program and probably never would have gotten off the ground without the public subsidy. As you know, that plant is just a few miles from Denali National Park, which is Alaska's only class I area and North America's highest peak.

As I understand it, the Park Service issued an adverse impact determination and appealed the State of Alaska's grant of a permit over the Park Service's objection; is that correct?

Mr. FRAMPTON. That is correct.

Mr. SYNAR. As a result of the Park Service action, the State and the power plant have agreed that an existing uncontrolled unit at the plant will be controlled which will help offset the new emissions and the impact of the plant should be greatly reduced. But 2 weeks ago the Park Service sent a letter to the State of Alaska indicating that the State may not be following all its agreed on conditions for that plant.

Explain for the subcommittee on the record, if you would, how the Department intends to deal with Alaska to ensure that this park is protected.

Mr. FRAMPTON. Well, Mr. Chairman, let me answer that question by describing how we got to where we are.

The Congress made a decision about the Clean Coal Demonstration Program, and the previous administration made the decision to have one of those demonstrations, largely significantly federally subsidized clean coal demonstration projects 4 miles from the border of Denali National Park. Some fairly significant amounts of private money as well as some public money had been spent in the last administration in reliance upon that decision.

We became involved and were prepared to fight the permit, appeal the permit on the grounds that the new plant with the old plant would impact the air quality in Denali National Park. However, the chances of winning that case on air quality through the State court system obviously were somewhat problematic.

There were those who wanted us to fight this issue because they don't like the Clean Coal Program, and there were those who thought that this plant should not have been selected near Denali or selected in Alaska at all, but those were issues ultimately for the Secretary of Energy.

Our concern was to protect air quality, and we went into this saying we will fight this, but if you are prepared to come to the table with a plan to basically cap over a long period of time the emissions from both the old 25-megawatt plant and the proposed 50-megawatt clean coal plant at the same level or roughly the same level as the existing plant is putting out now, and we get that commitment over a very long period of time, then we will be satisfied. That is the sort of offer you can't refuse. We will be satisfied with the air quality issues. And that looked to us like a much better deal than we might get by litigating. Because by litigating, we would probably end up with nothing on air quality issues.

There are some other issues in the case, but those are our issues. And we reached an agreement that got, I think, not all the way but 95 percent of the way to that goal; basically, maintaining existing emissions and, in fact, bringing the State permit level down about 50 or 60 percent from what it is today just on the existing 25-megawatt plant, plus some post-construction reopeners, some precedent-setting things that looked very good to us. So the Healy deal was negotiated under somewhat unusual circumstances.

The negotiations required a good partnership with the State of Alaska. But also, the Secretary of Energy standing there saying, if you can't meet the air quality problems, we just might throw over this whole project. So that was a very important element.

Now, we want to see that followed through obviously, and we think it will be. There are some glitches in the State incorporating all of the provisions of our agreement into the permit, but we think we are going to be able to work that out, and we are going to work it out. That is a condition of our whole approach to this, and we expect the bargain to be kept.

Mr. SYNAR. Well, we are watching.

Now, are there any other clean coal plants on the horizon?

Mr. FRAMPTON. Near national parks?

Mr. SYNAR. Yes.

Mr. FRAMPTON. Not that I know of. I would just say that we received a great deal of concern from the Department, from the new administration, the Department of Energy, and I feel pretty confident that if one of these should come up in this administration that we would have some notice and we would have some consultation, and we would have a different, a very different approach. Because, frankly, the Secretary and her staff over there are very concerned about park and wilderness air quality issues, and I think are going to take a very different attitude to these issues in the future.

Mr. SYNAR. We are, too, and we are going to look at this in the subcommittee.

Ms. Nichols, your time.

First of all, we are glad to hear of this new shift that you have announced today and that you have agreed at least to begin this process. For the record, under oath, what is the timetable for drafting these regulations?

Ms. NICHOLS. Well, we intend to meet or exceed the statutory timeframe for issuance of the regulations, and I think obviously that is necessary. I would just like to comment that I have been on board at EPA for 6 months now, and I have made visibility an issue of high priority to me in terms of——

Mr. SYNAR. Let me stop you here. What timetable are you talking about on regional haze? Statutory?

Ms. NICHOLS. The absolute deadline, I believe, would be 1996 to act on the recommendations coming out of the Grand Canyon commission.

Mr. SYNAR. From the Grand Canyon?

Ms. NICHOLS. It is my belief that is an absolute deadline.

Mr. SYNAR. Are we looking at the next couple of years or what are we looking at?

Ms. NICHOLS. As I indicated earlier, we are moving forward now with all the groundwork so that we will be prepared to issue the regulations shortly after, I can't say simultaneously with, but very soon after we receive the final report from the Grand Canyon commission.

Mr. SYNAR. So 1996?

Ms. NICHOLS. I would say early 1996, the beginning part of 1996.

Mr. SYNAR. What is early, first 3 months?

Ms. NICHOLS. I am not going to give you a month, but probably in the first quarter would be a realistic time to call me back here if you haven't seen it.

Mr. SYNAR. Oh, we will.

Now, in 1990, then Assistant Administrator Rosenberg's testimony to this subcommittee focused on the improvements that the Clean Air Amendments would make in visibility. You all recently completed a report to analyze those improvements. According to that report, the acid rain title of the act would substantially reduce the amount of sulfate that reached Eastern national parks and wilderness areas; is that correct?

Ms. NICHOLS. Yes.

Mr. SYNAR. By about 25 percent; correct?

Ms. NICHOLS. It is definitely an improvement, although it is not enough.

Mr. SYNAR. Now, how do those reductions translate to visibility improvements?

Ms. NICHOLS. We will have some numbers from my staff which were not included in the testimony but I believe that they are reliable. If you will recall the pictures that you had up on the board earlier showing the bad days and the median and the very best days, I think what the acid rain regulations in and of themselves will do is to shift the curve slightly. Currently, as indicated, we are experiencing the worst days about 30 to 50 days a year, or 30 to 50 very bad days.

By 2005, with the acid rain regulations, even if we were to do nothing else, which is not the case, that number of days would be reduced to 20 to 30. Whereas with the good days, the very excellent days, which I was privileged myself to have experienced a couple weeks ago when I visited that park for the first time, the very excellent are now, roughly, 20 to 30 days per year. And the estimate is that by the year 2005, again with no further action, we would be getting that up to 25 to 35 days. So, it is again an absolute, though small improvement.

Mr. SYNAR. Not significant for the normal visitor to see much change?

Ms. NICHOLS. The bulk of the days are still going to be pretty much the same.

Mr. SYNAR. What about the changes in nitrogen oxide levels in the East? They are going up; aren't they?

Ms. NICHOLS. As an absolute number.

Mr. SYNAR. But doesn't that and ozone cause harm to streams?

Ms. NICHOLS. Under the acid rain provision, alone, yes, although there are other measures that are involved under the Clean Air Act that we believe are going to bring the NO_x numbers down. That is why I was hesitating in response.

Mr. SYNAR. Do you have to address NO_x in the East?

Ms. NICHOLS. We will need to be addressing NO_x, for example.

Mr. SYNAR. Do you have a strategy for that?

Ms. NICHOLS. We are developing a strategy in many respects.

Mr. SYNAR. When will that be in effect?

Ms. NICHOLS. There is not a single NO_x strategy per se, but there are NO_x regulations under the Acid Rain Program that are out now, just out.

Mr. SYNAR. Under section 169B(a), the Administrator is supposed to conduct research identifying sources, and regions of sources, of visibility impairment and regions providing clean air to class I

areas. The interim findings of that report were due in November 1993. Where is that report?

Ms. NICHOLS. Well, it is not here; is it?

Mr. SYNAR. Did you even do it?

Ms. NICHOLS. This was a question that I asked when I arrived at EPA, and the question with respect to the research report——

Mr. SYNAR. Let me ask it this way; when are you going to start this report?

Ms. NICHOLS. I don't think that the report per se is the issue, if I may say so, Mr. Synar.

Mr. SYNAR. How about the interim findings?

Ms. NICHOLS. I think the interim findings are, if you will, transcended or have been superseded as a result of the NAS study. I think what the EPA is doing now is putting the bulk of its research funding on visibility into the work of the Grand Canyon, SAMI, into modeling work under the interagency working group on air quality modeling and under the improved program.

Project mojave, which is the source of most of the data that is being used for the Grand Canyon project, is being substantially underwritten by EPA, and that is where the bulk of that research money is going. I would have to say, by the way, that I can't speak for the research division of EPA.

Mr. SYNAR. Let's talk about that. Why did you all eliminate the funds for the atmospheric research for the 1995 budget request? Isn't that exactly the kind of data you are going to need for the regional haze regulations?

Ms. NICHOLS. I think not. I think that the research money that is continuing is the monitoring money which EPA needs to continue to provide, and that the shift in funds for the 1996 budget will be completing the research that we need to do the regulations in the 1994 fiscal year, and that in future years the money has been shifted into the fine particle work as part of our review of the fine particle standard which is essential.

Mr. SYNAR. Let me ask you about that. When are you going to finish the revised PM–10 particulate matter ambient air quality standard?

Ms. NICHOLS. Well, I believe we are on track on that one on an expedited basis. You know, Mr. Chairman, we are talking about cleaning up a big backlog of stuff.

Mr. SYNAR. You are working on it; right?

Ms. NICHOLS. We are actually moving faster than before. We will have it done, I believe, before the end of 1995.

Is that correct?

No, sorry.

First the review—sorry. Excuse me. I would expect——

Mr. SYNAR. This is under oath here, I like this.

Ms. NICHOLS. I appreciate that fact, and I——

Mr. SYNAR. No, that is a pretty bold thing, we are looking at 4 and 5 years here.

Ms. NICHOLS. We are asking for an expedited review on that, and I believe that what I was referencing on the 1995 timeframe was a review of the data. I think the actual air quality standard is a much longer-term process——

Mr. SYNAR. Is it 4 or 5 years?

Ms. NICHOLS. And I can get back to you with the schedule that is currently contemplated on that.

Mr. SYNAR. All right.

Isn't it true that the entire EPA visibility program is just really two people, one of whom is leaving. I am not talking about people who are doing the visibility work part time as a part of a group of other responsibilities, I am talking about how many people work strictly on visibility?

Ms. NICHOLS. It is correct to say that the actual full-time employment on visibility alone is as you have stated it, but I really think it is important to emphasize——

Mr. SYNAR. Who is that person?

Ms. NICHOLS. The individual is present here today. He can stand up, if you would like.

Mr. SYNAR. What is his name? I want to see the whole program.

Ms. NICHOLS. And he is doing, if I might add——

Mr. SYNAR. It is not every day that you can see the whole program.

Ms. NICHOLS. No, if I may say so, he is doing the work of more than one person.

Mr. SYNAR. How do you expect him to do all this?

Ms. NICHOLS. Frankly, I don't. I think we need to supplement his work in a number of ways, and I think without undermining the importance of the visibility work, I really think it is important for you to recognize that the work of people in other programs, including the Acid Rain Program and our Office of Air Quality Planning and Standards that is devoted to visibility-related work is an important part of what this individual is going to be able to accomplish. But we are also looking to supplement the resources through some internal shifts as well.

Mr. SYNAR. You heard Ms. Shaver's testimony. She believes there are things that EPA can do within existing law to provide more protection. She, for example, recommended EPA initiate a regional ozone transport commission to deal with the interrelationship between urban ozone nonattainment and ozone problems in rural areas like Shenandoah. Are you studying this idea?

Ms. NICHOLS. Yes, I am actually. I have raised this question in several recent meetings I have had with Governors and other air quality officials who have expressed frustration about transport issues. I think for the moment, we are optimistic, although again we are cautiously optimistic that the voluntary efforts of States that came together to form SAMI are an indication of a serious desire on their part to address this issue.

We would much prefer, and I think the Administrator would prefer, to act on ozone transport region petitions that come from those who are going to be put into those regions as opposed to forcing those types of actions directly, because I think it is more likely to be effective that way. But it is certainly an option that does exist in the law.

Mr. SYNAR. She also recommends using revisions of the national ambient air quality standards as a way to access pollution effects. When will you all be revising those standards other than the PM–10?

Ms. NICHOLS. The PM–10 question is——

Mr. SYNAR. Other than that.

Ms. NICHOLS. We have the ozone standard which is also under an expedited review, and I believe that as I indicated in my testimony, that visibility will be a specific issue that will be addressed in that standard.

Mr. SYNAR. She also suggested that you make States keep track of increment consumption as part of having an approved SIP. If a State doesn't keep track of how much of its air quality margin they have used up, she argues that the program is meaningless. Do you agree with that?

Ms. NICHOLS. Yes, I think as I often agree with Ms. Shaver that it is correct and that this is a factor that needs——

Mr. SYNAR. If you agree with her, wouldn't you make it a requirement for the SIP?

Ms. NICHOLS. I believe that this is, in fact, a requirement that we are in the process of considering applying to States with respect to delegation of their PSD programs.

Mr. SYNAR. I am also concerned by reports that one purpose of the new source review working group is to water down the BACT which is required for new sources which affect class I areas. First, could you define top-down BACT for us.

Ms. NICHOLS. Well, top-down BACT is a decision that is made on a project that involves the decision to use the best available control technology defined as the best. There has been no discussion of that issue, to my knowledge, in the new source review task force. It was not put on the table, and to my knowledge, no member of the committee has raised that as an issue. So if that fear has been expressed by someone, I don't believe it is supported by any evidence or any of the record of that committee.

Mr. SYNAR. If that is true, then that is a good pledge.

Let me ask you the question I have asked almost every panel. Explain to me why you are waiting for the Grand Canyon.

Ms. NICHOLS. Well, as I have indicated, we don't believe we need to wait for them in order to do the background work to get a rulemaking out. And frustrating though it is, I have learned that rules don't come out of EPA in a period even on the most expedited basis in less than about 2 years no matter what you do, even when you have all the data in place. So we are beginning that process, as I indicated, now. I do feel that with respect to strategies to be used for regional haze, there is information coming out of the Grand Canyon discussion processes that will be helpful to us in formulating strategies that will be workable for States and industries and that will enjoy a level of support that will be necessary to get those regulations through a complete rulemaking process and, hopefully, not have them bogged down in the courts when we finally get them out.

Mr. SYNAR. Well, let me thank all three of you for being here today. I think it has been very helpful.

Let me conclude with something which we as Members of Congress and particularly Democratic Members of Congress need to make very clear.

We were pretty tough on Bush and Reagan on these areas. We intend to be just as tough with our own players who wear the same stripes. There is an attitude around here "not on our watch," well,

it is our watch now, and we expect to see progress, and the same intensity and commitment that we had to try to get this thing done from 1990, and now, and it is going to be back. So I hope all of you and all of your departments realize you don't get a free ride on this.

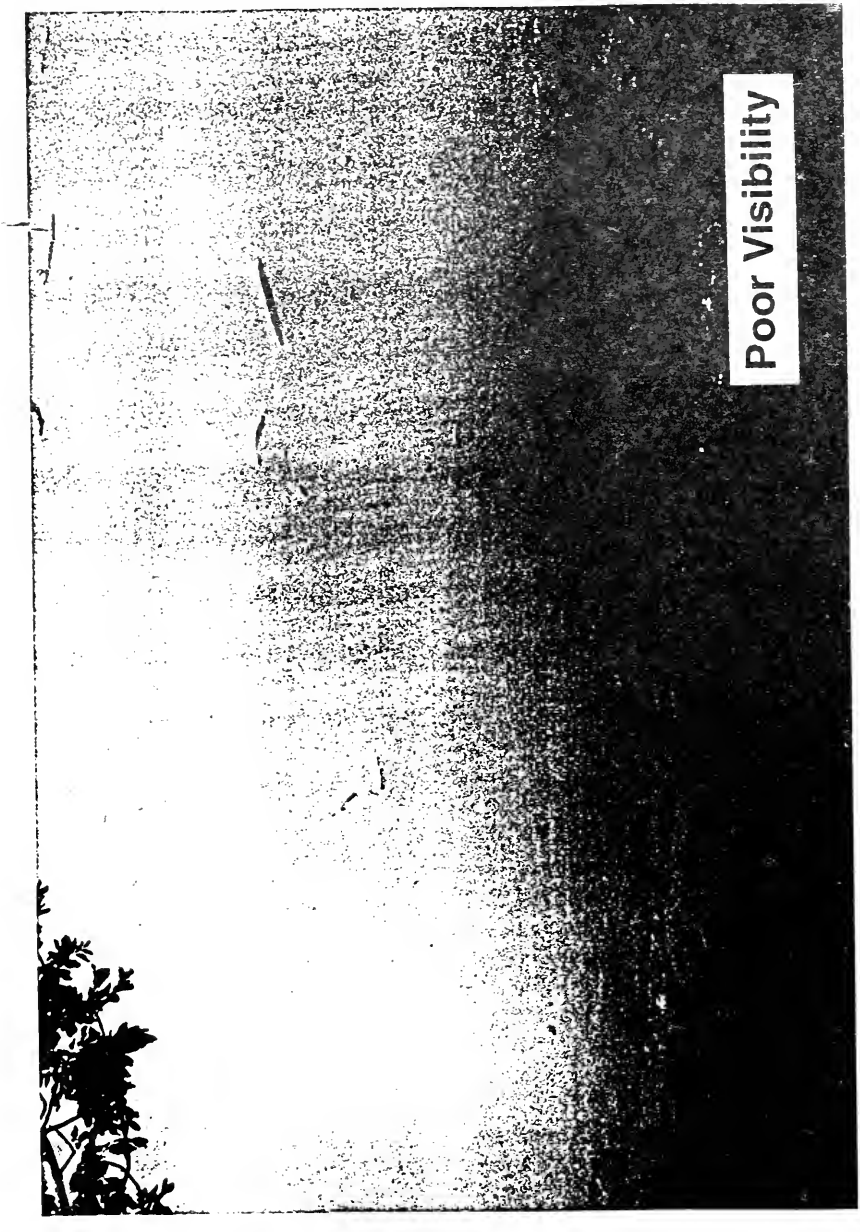
And we will come back and we will revisit and we will reread the words spoken today—the commitments, the promises that we are going to solve this problem. I hope you take that as an invitation to work with us. Even more importantly, this is a commitment by us that we will continue to monitor and review this and make this thing happen because it is just unacceptable that we have waited this long to deal with an issue which the rest of the Nation clearly wants solved.

Thank you all for being here today.

[Whereupon, at 11:55 a.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

APPENDIX

MATERIAL SUBMITTED FOR THE HEARING RECORD



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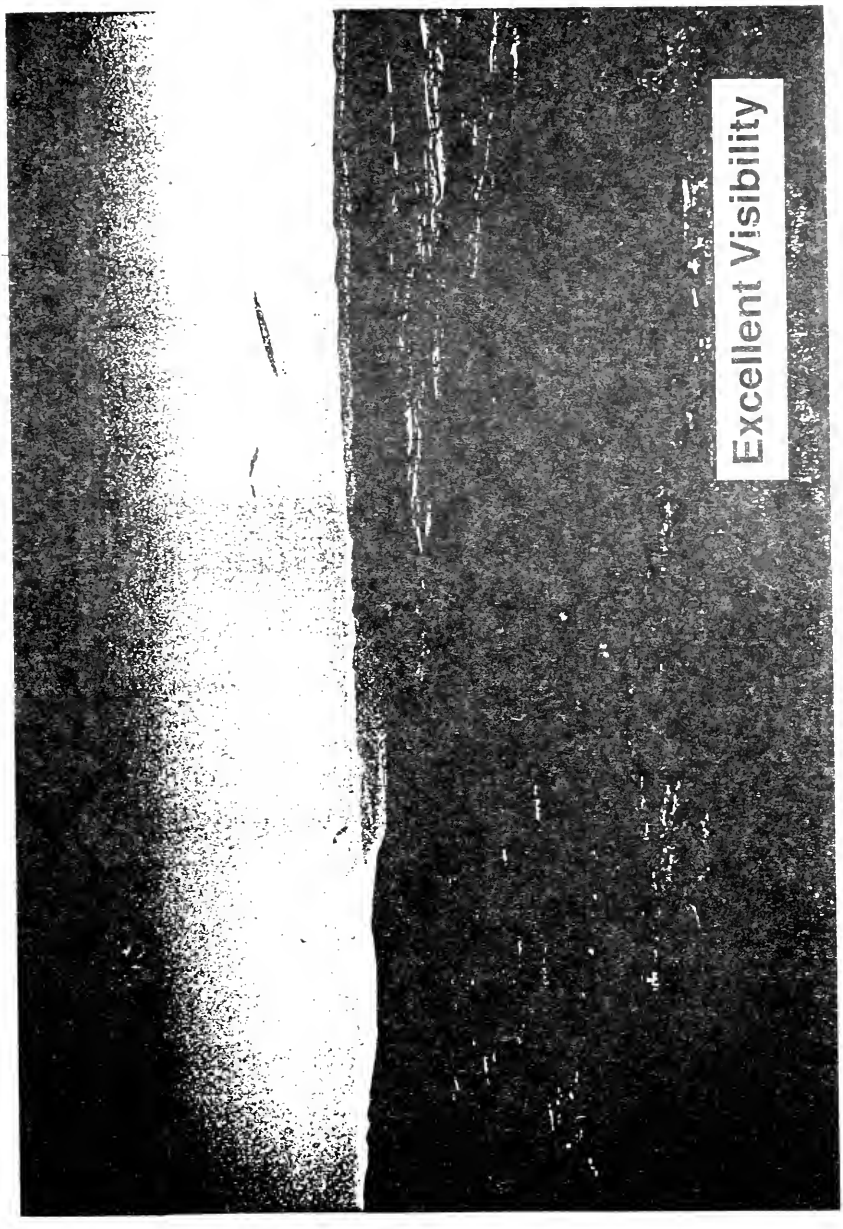
Excellent Visibility

4 Deciview Improvement from Average

Annual Average Visibility

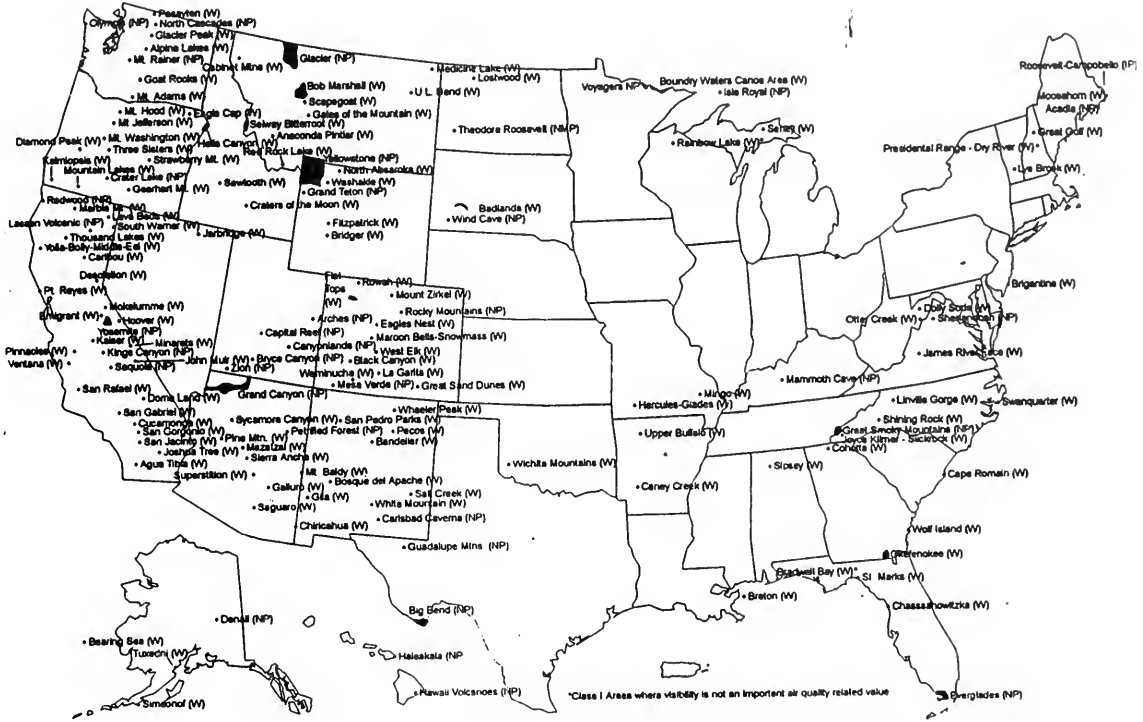

Figure ES-1. Map of Mandatory Federal Class I Areas


AIR QUALITY INDEX
OZONE MODERATE
VISIBILITY 0-10 MILES

Shenandoah

National Park
National Park Service
U.S. Department of the Interior

AIR QUALITY RATING SYSTEM

Shenandoah National Park is known for its beautiful views of the valleys and mountains seen from the Skyline Drive. Although the view is still spectacular on most days, the actions of our modern world have taken a toll in Shenandoah as they have in other parts of the world. Some days visibility will be limited. Some days the ozone level may affect the health of visitors. On a few occasions, ozone levels have exceeded the federal health standards. Because of that health factor, this advisory statement has been prepared. The rating system explained below will help you determine how to plan your stay in Shenandoah National Park, based on the current levels of visibility and ozone.

RATING INDEX

The National Park Service has developed an Air Pollution Index rating system to advise visitors of ozone levels and current degrees of visibility. In Shenandoah National Park the ozone and visibility ratings are monitored each day, then Park visitors are advised of the ratings through signs, brochures, and visitor center displays. Ozone is monitored in three locations in the Park. The ozone ratings are: Low (not likely to effect health), Moderate (highly sensitive people may feel effects), or Unhealthy (large portion of the population will be able to feel effects). The visibility ratings are measured in miles (0-10, 10-30, 30+). Be aware that the quality of air can change quickly. The posted levels reflect the last time the ozone and air quality levels were monitored by the Park.

VISIBILITY

The same sulfates that contribute to the serious acid rain problem in this region also cause visibility impairment. This hazy smog is noticed mainly in the summer. The haze is often dense enough to prevent visitors from being able to enjoy the otherwise spectacular views from the Skyline Drive and mountain peaks within the Park. Visibility levels are monitored at Big Meadows.

OZONE

The second type of pollution is ozone. You may have heard recent news reports about the hole in the ozone layer over Antarctica. This stratospheric ozone is a natural occurrence and is needed to filter harmful ultraviolet light from the sun's rays. However, human-caused ozone found down here in the air we breath is harmful to people and is suspected of damaging many species of plants.

HUMAN-CAUSED OZONE

This pollutant does not actually come out of a smokestack or auto tailpipe but is "created" in the atmosphere as a result of a chemical reaction between volatile organic compounds (VOC's) and nitrogen oxides (NOx). VOC's enter the atmosphere as fluids, such as gasoline, printing ink, cleaning solvents, and dry cleaning solvents, then they evaporate. Nitrogen oxides, like sulfur dioxide, are given off by the industrial burning of fossil fuels and by auto emissions. Concentrations of ozone in the Park have been found that are higher than in many cities. On a few occasions, levels have exceeded the federal health standards. Ozone is a poisonous form of oxygen which can damage both plant and animal tissue. In humans it irritates the pulmonary membranes, can cause coughing, sinusitis, chest pains and a general feeling of weakness. It can also aggravate asthma and other breathing disorders, making attacks more frequent or severe. Some normally healthy people are particularly sensitive to ozone and can feel its effects at low levels of concentration.

If the ozone rating today is unhealthy, you may wish to refrain from strenuous physical exercise. People with respiratory ailments should limit their exposure by staying indoors.

WHAT CAN I DO?

Keep informed of efforts in your community, at the local, state or federal level, and support those efforts to clean up our air!

NATIONAL PARK SERVICE

SHENANDOAH NATIONAL PARK

U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Briefing Statement

April 28, 1994

REGION/OFFICE: WASO, Air Quality Division, Research Branch

ISSUE: Air Quality - Determination of Sources of Pollutants

BACKGROUND: To track progress on "remedying existing and preventing future impairment of visibility" in national parks, the NPS must determine which pollutants contribute to impairment, identify the sources or source areas which emit them, and then understand the transport mechanisms which bring them into the parks.

The NPS has conducted research on methodologies for identifying source areas since 1978. There are two basic methods which can be used to estimate the impact of a source on a park. These are 1) modeling forward from the source or 2) modeling backward from the park (receptor). Because emission information is often unavailable or highly uncertain, NPS has performed "receptor modeling" in which data obtained at a park is used to back calculate where the pollutants were likely to have arrived from. The data necessary for receptor modeling are obtained by monitoring the pollutant concentrations in the parks while the necessary metcorological data are usually obtained from the National Climatic Data Center. Intensive field studies occasionally provide additional data.

CURRENT STATUS: Several receptor modeling techniques have been developed and employed by the NPS. Results of these models show clearly that pollutants which impair visibility in many NPS units often originate hundreds of miles from the parks and frequently cross state and international boundaries during transport from the sources to the receptors. Several examples are shown in Figures 1 through 5. The graphs show where air masses are most likely to arrive from on days when the particulate sulfate concentration at the park is high. The plotted values are relative probabilities. For example, a value of 3 means that air was 3 times as likely to arrive from that area as would be expected by random events alone. Each graph is based on 7-11 years of data.

Sources in Mexico are the largest contributors to high sulfate concentrations in the Southwestern United States. Figures 1 through 3 show examples of high sulfate source regions for, Big Bend and Guadalupe Mountains National Parks in Texas, and Chiricahua National Monument in Arizona. Most sulfate at Big Bend and Guadalupe Mountains originates in Mexico with the highly industrialized Monterrey, Mexico, area being a large contributor. High sulfate days at Chiricahua are associated with air masses arriving from the copper smelter region of both Arizona and Mexico as well as the entire border region between the southwestern states and Mexico. Because Mexico is a significant and possibly the primary contributor to sulfate in the Southwest the effectiveness of any control strategy implemented by the United States will be partially offset by emissions from Mexico.

Results for Glacier National Park in Montana and Acadia National Park in Maine, shown in Figures 4 and 5, clearly show that sources in Canada contribute significantly to sulfate loading in these parks. High sulfate days at Glacier are often associated with transport of air masses from the front range of the Canadian Rockies including the Edmonton, Alberta area where there are oil refining and other fossil fuel related activities. High sulfate concentrations at Acadia are often associated

with transport from the industrialized Great Lakes area including both the U.S. and the Canadian sides of the border.

The attached photographs illustrate the median visibility during days with low sulfate concentrations (top) as compared to days with high sulfate concentrations (bottom). Picture pages, in order, are for Chiricahua, Big Bend, Glacier, and Acadia.

SERVICE POSITION: The Service will continue to analyze data collected in its monitoring network to identify the causes of visibility impairment.

POSITION SUPPORTED BY: EPA, States, Federal Land Managing Agencies, and members of the scientific community.

POSITION OPPOSED BY: No one presently, but some industrial representatives may challenge interpretations from time to time.

FUNDING REQUIREMENTS: In-house staff, approximately $800,000 NPS funds.

CONTACT: John P. Christiano, Chief, Air Quality Division, National Park Service, P.O. Box 25287 Denver, CO 80225-0287 [(303) 969-2070]

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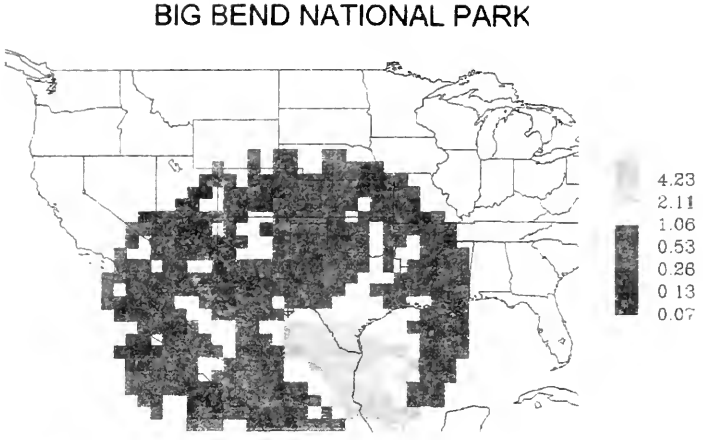


Figure 1. High sulfur source contribution function for Big Bend National Park, Texas for July 1982-June 1992. Plotted values are the relative probabilities that air arrived from that area if the sulfur concentration was high as compared to the probability that air arrived from all directions with equal probability

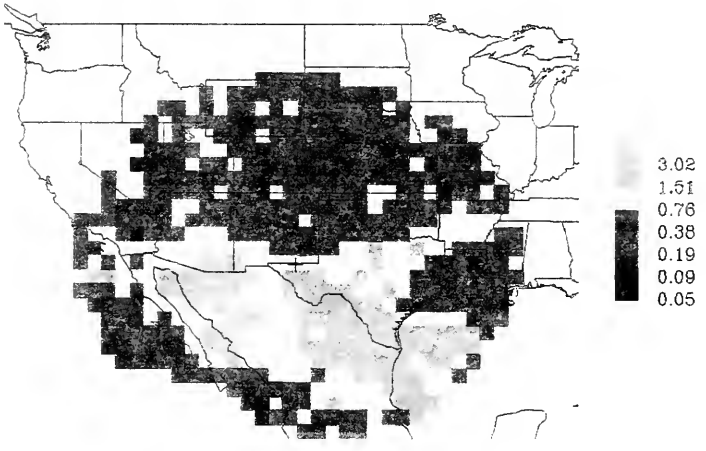


Figure 2 High sulfur source contribution function for Guadalupe Mountains National Park, Texas for December 1981-November 1992.

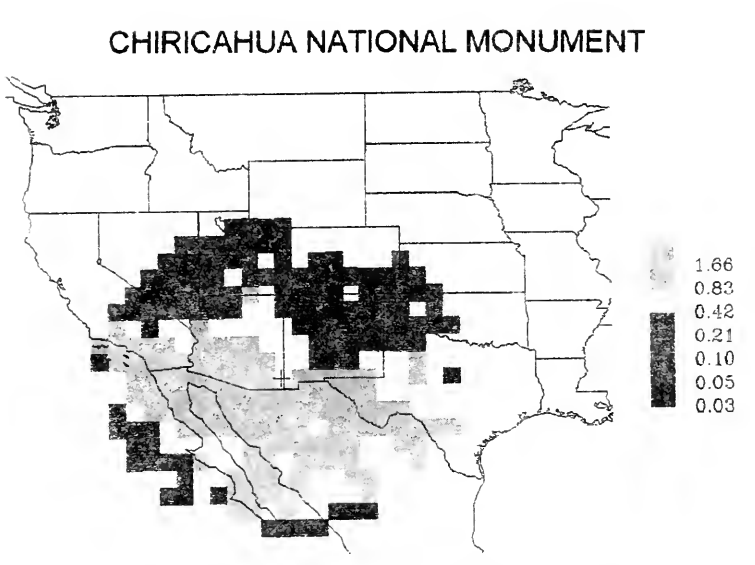


Figure 3. High sulfur source contribution function for Chiracahua National Monument, Arizona for January 1982-December 1992.

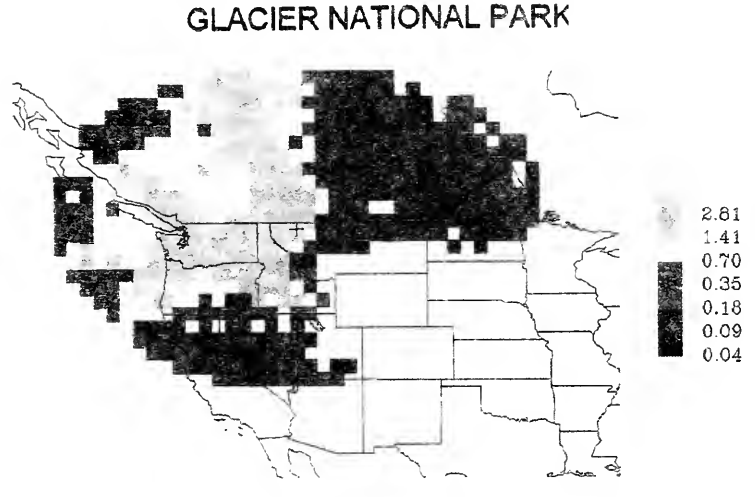


Figure 4. High sulfur source contribution function for Glacier National Park, Montana for September 1982-August 1992.

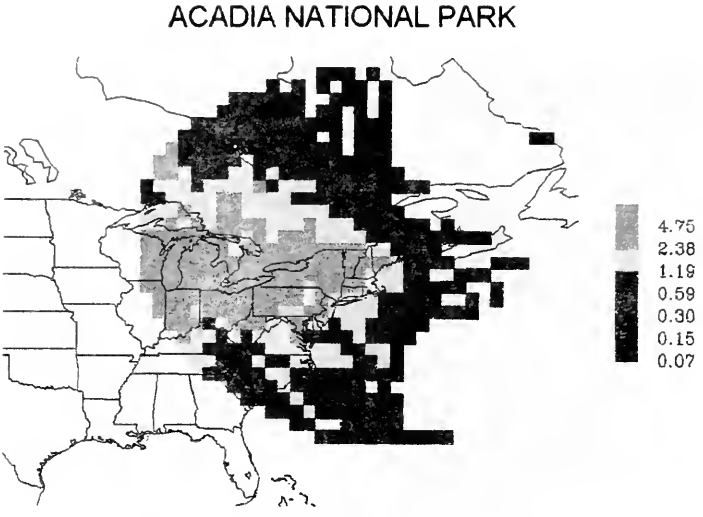


Figure 5. High sulfur source contribution function for Acadia National Park, Maine for September 1985-August 1992.

United States Department of the Interior

NATIONAL PARK SERVICE
Air Quality Division – Ft. Collins Office
Cira-Foothills Campus
Colorado State University
Ft. Collins, CO 80523

IN REPLY REFER TO

July 8, 1994

N3615 (475)

Ruth Fleischer, Esq.
Counsel, Subcommittee on the Environment, Energy, and Natural Resources
Committee on Government Operations
U.S. House of Representatives
B3719 Rayburn Office Building
Washington, D.C. 20515-6145

Dear Ms. Fleischer:

This letter is to correct an error in my testimony during the hearing on air quality in national park and wilderness areas before the Subcommittee on Environment, Energy, and Natural Resources of the House Government Operations Committee on April 29, 1994. In responding to Mr. Synar's invitation to comment upon the earlier testimony of Patrick Michaels, I made statements that I have realized, in retrospect, incorrectly characterized the 1940's visibility conditions in the Shenandoah National Park area. While the corrections set forth below show the changes in visibility at Shenandoah between the 1940's and 1990's to be of lesser magnitude than my statements at the hearing had suggested, the changes are nevertheless significant and dramatic. The visibility conditions at Shenandoah National Park in the 1990's are substantially degraded in comparison to the visibility conditions of the 1940's.

With respect to my specific error, I incorrectly stated that the average visual range in the Shenandoah National Park are in the 1940's was 120 to 150 miles. In fact, Trijonis has estimated natural background visual range in the eastern United States as 64 to 120 miles (State of Science and Technology Report No. 24, National Acid Precipitation Assessment Program, 1990). The "clear" photograph of Shenandoah National Park displayed at the hearing probably approaches natural conditions. Husar's study of airport visibility data suggests that average summertime visual range in the southeastern United States in the late 1940's had already deteriorated to about 13 miles, and that it further decreased to about 6 miles by the early 1970's. The National Park Service data for Shenandoah National Park during the 1990's shows average summertime visual range of about 6 miles.

My statements, as corrected, continue to attest to the substantially degraded visibility conditions at Shenandoah National Park.

In addition, I stand by my fundamental criticism of Dr. Michaels' testimony, as follows: Dr. Michaels' implicit attempt in his testimony to discredit certain trend analysis performed by the Shenandoah National Park staff was flawed, because Dr. Michaels failed to use the same period

of record as the park staff for trend analysis. Rather, Dr. Michaels used a period of record that tended to minimize the modern day deterioration in visibility conditions at Shenandoah.

To illustrate the misleading character of Dr. Michaels' analysis, I introduced in my testimony the complete historic record of summer visibility data for the southeastern United States, as reported by Husar in the above-referenced State of Science and Technology Report No. 24. Because trend analyses should consider as long a time period as possible to distinguish trends caused by human activity from natural meteorological variability, I believe that this period of record provides a better perspective than the period used by Dr. Michaels. As my testimony correctly stated, visibility in the Shenandoah area generally deteriorated from 1940 to 1970, improved from 1970 to 1980, and deteriorated again from 1980 to the present so that current conditions are comparable to 1970 conditions.

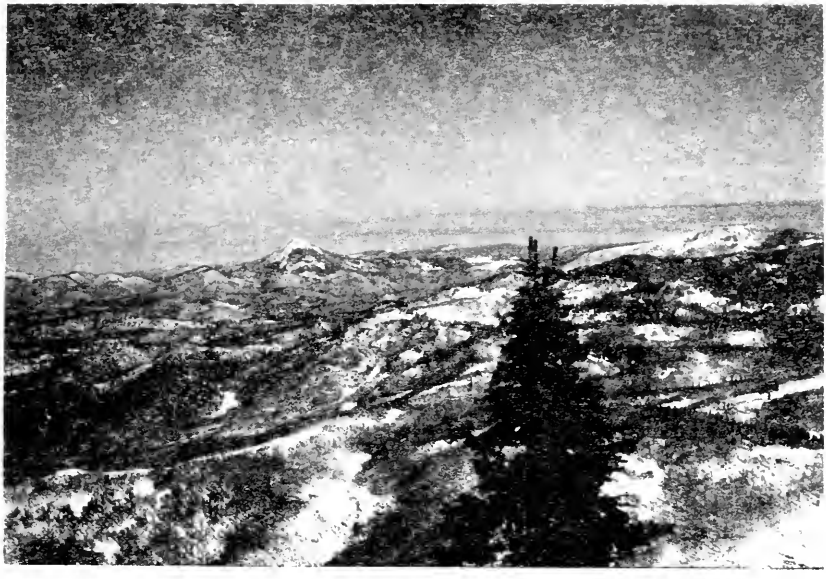
I appreciate this opportunity to clarify my testimony, and I apologize for any problems my earlier statement may have caused. Please contact me at (303) 491-8292 if you have questions regarding this matter.

Sincerely,

William C. Malm, Ph.D.
Research Physicist

Print #1. Taken 12/9/90 by the visibility monitoring camera located at Storm Peak lab south of the Mt. Zirkel Wilderness. The peak in the left center of the picture is Hahns Peak. This picture indicates a clear day in the Mt. Zirkel Wilderness.

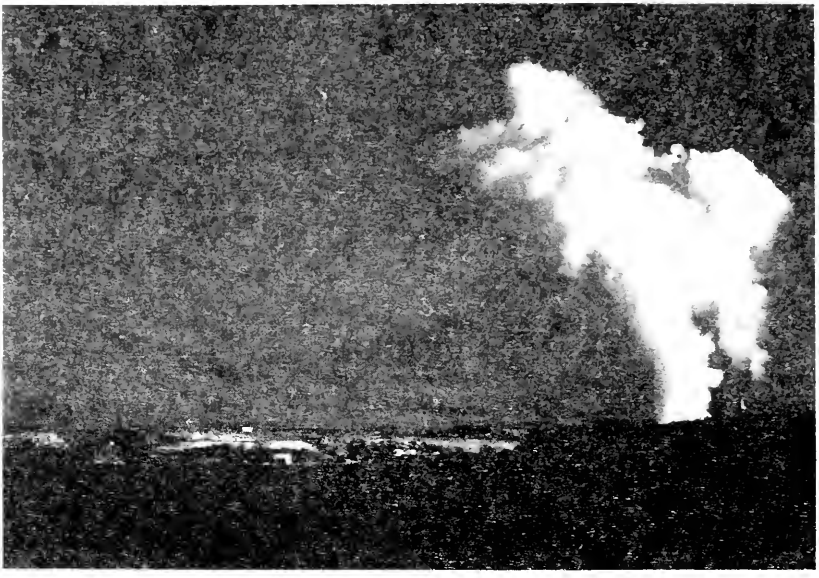
Print #2. Taken 10/11/92 by the visibility monitoring camera located at Storm Peak lab south of the Mt. Zirkel Wilderness. The peak in the left center of the picture is Hahns Peak. This picture indicates a layered haze in the Mt. Zirkel Wilderness.



Print #3. Taken 12/2/90 by the visibility monitoring camera located at Storm Peak lab south of the Mt. Zirkel Wilderness. The peak in the left center of the picture is Hahns Peak. This picture indicates layered haze in the Mt. Zirkel Wilderness.

Print #4. Taken 9/6/91 by the visibility monitoring camera located at Storm Peak lab south of the Mt. Zirkel Wilderness. The peak in the left center of the picture is Hahns Peak. This picture indicates a very hazy condition in the Mt. Zirkel Wilderness.

Print #5. Taken January 1991 by Douglas Latimer. This picture shows the plume from the Hayden Power Generation Station near Hayden, Colorado.

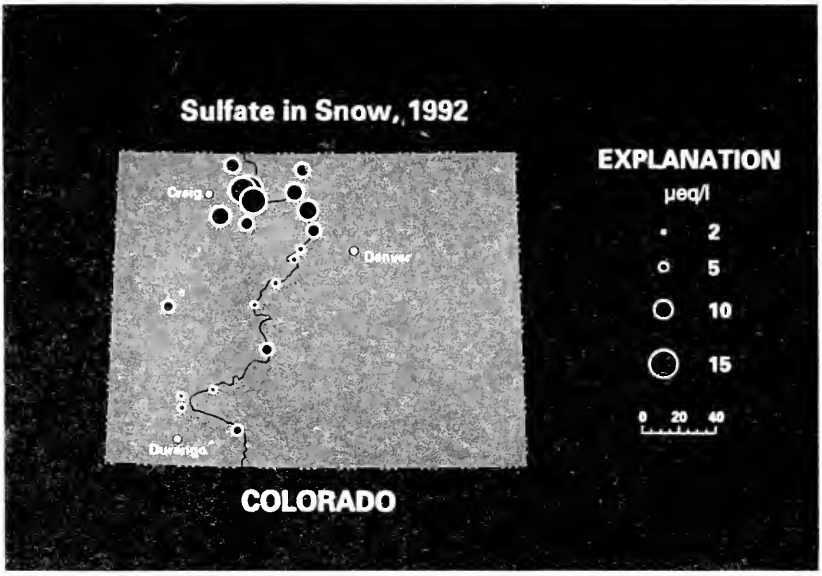


Print #6. Taken January 1991 by Douglas Latimer - This picture shows the plume from the Hayden Power Generation Station near Hayden, Colorado. While the steam dissipates relatively close to the source, the particulates in the plume appear to be visible for a significant distance.

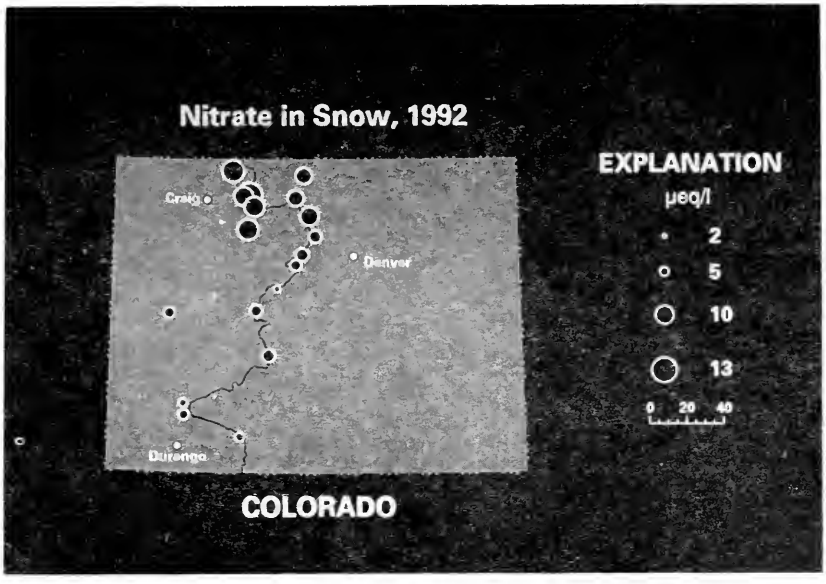
Print #7 Taken by John Turk, USGS, in the Mt. Zirkel Wilderness - This picture shows a member of the USGS snow sampling crew digging a snow pit within the Mt. Zirkel Wilderness.

Print #8 Taken by John Turk, USGS, in the Mt. Zirkel Wilderness - This picture shows a member of the USGS snow sampling crew taking a snow sample from a snow pit within the Mt. Zirkel Wilderness.

Print #9 Taken by John Turk, USGS, in the Mt. Zirkel Wilderness - This picture shows a member of the USGS snow sampling crew with a container used to transport snow samples back to the USGS lab for chemical analysis.

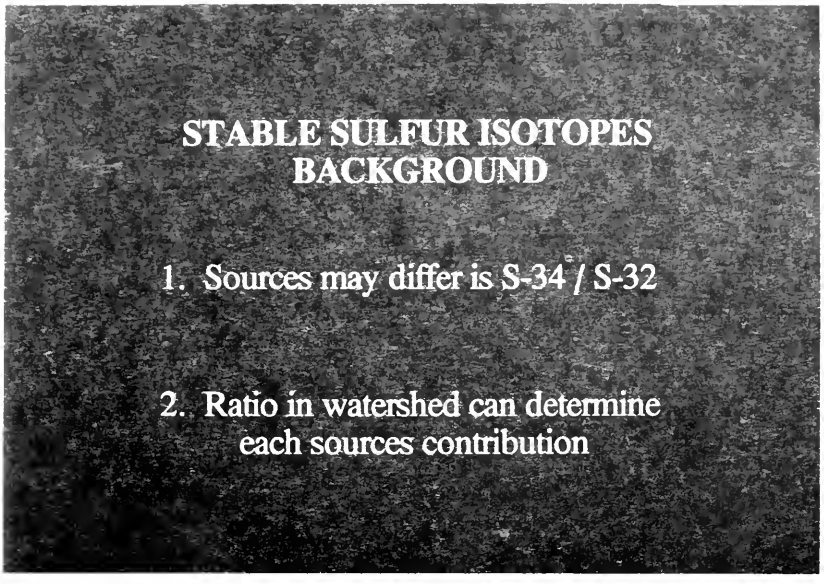


Print #10 Graphic produced by John Turk, USGS indicating concentrations of sulfate in snow for the year 1992 in selected locations in Colorado. The information in the print indicates that sulfate in the Colorado snow pack for the sites monitored is highest in the area of the Mt. Zirkel Wilderness.

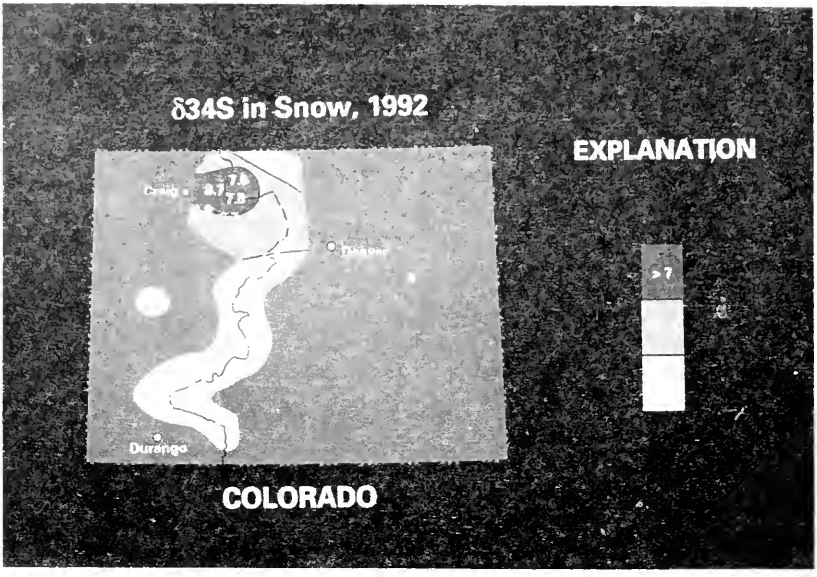


Print #11 Graphic produced by John Turk, USGS indicating concentrations of nitrate in snow for the year 1992 in selected locations in Colorado. The information in the print indicates that nitrate ln the Colorado snow pack for the sites monitored is highest in the area of the Mt. Zirkel Wilderness.

Print #12 Graphic produced by John Turk, USGS indicating concentrations of hydrogen ion in snow for the year 1992 in selected locations in Colorado. The information in the print indicates that hydrogen ion in the Colorado snow pack for the sites monitored is highest in the area of the Mt. Zirkel Wilderness.



Print #13 Graphic produced by John Turk, USGS, describing the different naturally occurring isotopes of sulfur and that the ratio in a watershed can help determine source contributions.



Print #14 Graphic produced by John Turk, USGS, identifying ratios of sulfur isotopes at selected locations in Colorado. The information on this print indicates that sulfur isotopes in the snow pack are significantly different in an area which includes the Mt. Zirkel Wilderness as compared to other selected sites in Colorado.

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