



# United States Department of the Interior

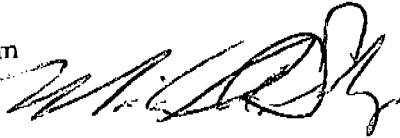
NATIONAL PARK SERVICE  
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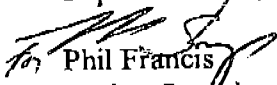
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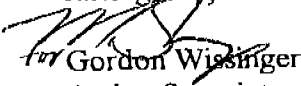
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Memorandum

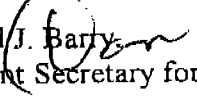
From:   
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Through:   
Robert Stanton  
Director, National Park Service

To:   
Donald J. Barry  
Assistant Secretary for Fish and Wildlife and Parks

Subject: Request for Rulemaking to Restore and Protect Air Quality Related Values  
in National Parks and Wilderness Areas

**Requested Action.** We request that the Assistant Secretary for Fish and Wildlife and Parks, as the Federal Land Manager (FLM) for Department of the Interior-administered Class I areas, ask EPA to initiate a general rulemaking to enhance air quality in national parks and wilderness areas in order to restore and protect resources and values that are being adversely affected by air pollution. We also recommend that the Assistant Secretary ask EPA to issue a finding that the air quality plans for states affecting park air quality via pollutant transport are inadequate to protect park resources from the adverse effects of air pollution and are otherwise not in compliance with Clean Air Act (CAA) requirements for preventing significant deterioration (PSD) of air quality.

Shenandoah National Park (NP), Great Smoky Mountains NP, and other units in the region (i.e., Blue Ridge Parkway) have been experiencing significant air pollution

problems, with well-documented adverse effects on a multitude of resources. Air quality continues to deteriorate in spite of ongoing efforts to reduce pollution on a national and regional scale. If EPA responds favorably to our requests, states would be required to revise their State Implementation Plans (SIPs) to include additional pollution control strategies needed to mitigate adverse air quality impacts on park resources and values.

**Legislative and Regulatory Support for the Requested Action.** The Organic Act of 1916 directs the National Park Service to conserve park resources and values in a manner that will leave them unimpaired for the enjoyment of future generations. The CAA supplements our responsibilities under the Organic Act and provides a means for carrying out our resource protection responsibilities. In particular, the CAA established a program to prevent significant deterioration of air quality (PSD). One primary purpose of this program is to "preserve, protect, and enhance" the air quality in national parks, national wilderness areas, and other areas of national significance (Section 160). In addition, the CAA gives the FLM and the Federal official charged with direct responsibility for management of Class I areas (i.e., the Park Superintendent) an affirmative responsibility to protect air quality related values (AQRVs) from the adverse impacts of air pollution (Section 165). In accordance with the policy of section 101(b)(1) of the CAA and the purposes of section 160 of the CAA, EPA codified state plan requirements at 40 CFR 51.166. Under 40 CFR 51.166(a)(1), each applicable SIP shall contain emission limitations and such other measures as may be necessary to prevent significant deterioration of air quality. Furthermore, states are required to review the adequacy of their plan on a periodic basis and within 60 days of such time as information becomes available that the plan is substantially inadequate to prevent significant air quality deterioration or that an applicable increment is being violated (40 CFR 51.166(a)(4)). Also, EPA has acknowledged that the CAA provides legal authority to address adverse impacts on AQRVs in Federal Class I areas from both new and existing sources of pollution.

Given the documented adverse and deteriorating conditions at Shenandoah and Great Smoky Mountains NPs, the SIPs of states in the region are inadequate to "prevent significant deterioration of air quality" in these Class I areas, and substantial emission reductions are needed to help mitigate these impacts. Therefore, considering our affirmative responsibility to protect the AQRVs of these areas, we must work with EPA and states to mitigate these adverse impacts. The requested PSD SIP revisions for individual states and the general AQRV Restoration and Protection rule are intended to ensure that states appropriately use the regulatory tools available to them to address these adverse impacts.

**Background.** Research and monitoring at Shenandoah and Great Smoky Mountains NPs have documented adverse air pollution impacts to vegetation, soils, streams, and visibility. In September 1990, the Assistant Secretary for Fish and Wildlife and Parks, announced an adverse impact finding for Shenandoah NP. Similarly, in February 1992, the Assistant Secretary announced an adverse impact determination for Great Smoky Mountains NP. States in the region have long-recognized the adverse impacts to AQRVs at Shenandoah

NP, Great Smoky Mountains NP, and other areas in the Appalachian Mountains. For example, in 1992 eight southeastern states formed the Southern Appalachian Mountains Initiative (SAMI), a voluntary consensus-based cooperative whose mission is to develop measures "to remedy existing and to prevent future adverse effects ... on the air quality related values of the Southern Appalachians..." Although SAMI's work continues, and we are hopeful participating states will adopt and implement appropriate emission reduction strategies, broader-based action is needed now.

In 1996, EPA committed to the Assistant Secretary that they would propose a general rule that would recognize the affirmative obligation of states to protect AQRVs and provide a regulatory mechanism for EPA to require states to revise their SIPs to mitigate adverse effects. To date, EPA has not embarked on the promised rulemaking.

**Current Air Quality Impacts.** Shenandoah NP, Great Smoky Mountains NP, and the Blue Ridge Parkway are located in the Chesapeake Bay's nitrogen and sulfur deposition airsheds as determined by the NOAA/EPA Regional Acid Deposition Model. Long-term monitoring data show that visibility, vegetation, and streams in both Shenandoah and Great Smoky Mountains NPs have been, and continue to be, adversely impacted by haze-, acid-, and ozone-forming air pollution levels that are among the worst in the nation. Given Blue Ridge Parkway's proximity to these two parks, similar adverse impacts are also occurring there. Substantial emission reductions will be needed to mitigate these adverse conditions. While other CAA measures will help, only specific SIP revisions will assure that appropriate action is taken to preserve and protect these special resources.

Shenandoah and Great Smoky Mountains NPs suffer the greatest degree of visibility extinction and the highest sulfur and sulfate concentrations of any parks in the National Park system. Consequently, park views are severely impaired. Over the past 50 years, visibility at Shenandoah and Great Smoky Mountains NPs has decreased by 80% in the summer and 40% in the winter. Annual average visibility is around 25 miles, when it should be closer to 100 miles. Current summer visibility averages around 15 miles, when it should be around 65 miles. Sulfates account for over 70% of the summer haze. To underscore how national emission reduction programs do not necessarily address regional AQRV concerns, we have examined recent trends at Great Smoky Mountains and Shenandoah NPs. Despite emission reduction efforts under the Acid Rain Program, Tennessee Valley Authority power plants located near Great Smoky Mountains NP have increased annual sulfur dioxide emissions by over 100,000 tons from 1984-1998. Between 1984 and 1999, summer aerosol sulfate concentrations at Great Smoky Mountains NP have increased by 27%. Emissions trends for all power plants in the Chesapeake Bay airshed and NPS-derived particulate matter source attribution areas for both parks should be determined through careful evaluation of Continuous Emissions Monitors data.

Ozone levels in the region are increasing, resulting in an increase in the number of unhealthy days and seasonal cumulative exposures harmful to sensitive plant species. For example, during the 1997-1999 period, both Virginia and Tennessee data show that

Shenandoah and Great Smoky Mountains NPs were exposed to levels of ozone that were among the highest in both states and above the new 8-hour ozone standard established to protect human health. In 1998 and 1999, Shenandoah NP recorded 22 and 15 days, respectively, when the maximum daily 8-hr ozone average exceeded 85 parts per billion (the level of the new health based standard), whereas Great Smoky Mountains NP recorded 44 and 52 such days, respectively. These high ozone levels pose substantial health and safety threats to park visitors and staff, prompting the parks to issue ozone advisories to alert visitors and staff of unhealthy ozone conditions. In addition to the human health concerns, high ozone levels are adversely impacting park vegetation by causing visible foliar injury and growth loss. There are 40 "ozone sensitive" plant species at Shenandoah NP, where seasonal cumulative exposures over the past decade, with a sharp increase between 1997 and 1998, have exceeded the level that EPA proposed to protect less sensitive agricultural crops (i.e., proposed secondary ozone NAAQS). At Great Smoky Mountains NP there are 30 species of plants that show visible leaf damage at levels substantially lower than the proposed secondary NAAQS, and an additional 60 species of plants that show foliar symptoms consistent with ozone exposures. There is also evidence of growth reductions on black cherry and yellow-poplar, species also found at Shenandoah NP and other federal, state and private forest areas.

Acid deposition is acidifying streams and soils and causing loss of soil nutrients in numerous sensitive watersheds. In the southeast, many unglaciated soils are still accumulating sulfur and are not recovering despite Phase I reductions of the Acid Rain Program. Regional decreases in wet nitrogen deposition have not been observed in the United States. Great Smoky Mountains NP has the highest known total deposition (wet, dry, cloud) of acid inputs in the United States with nitrate levels increasing. Annual wet nitrate deposition at Great Smoky Mountains NP has increased 26% from 1981 through 1998. The park's spruce-fir ecosystem contains nitrogen saturated soils, which leach critical forest nutrients, like calcium. The park's high elevation forests are leaking more nitrate into park streams than in any other undisturbed watershed in North America. At Shenandoah NP stream acidification has caused measurable reductions in diversity of fish species, size of blacknose dace, and density of brook trout. Intense rainstorms trigger episodic acidification that at times has the capacity to kill brook trout, an acid-tolerant species. Precipitation-weighted sulfate and nitrate concentrations in both park's precipitation have increased since substantially reduced 1995 levels. This likely indicates increasing sulfur dioxide and nitrogen oxides emissions at Acid Rain Program Phase II sources impacting Great Smoky Mountains and Shenandoah NPs.

Although much of the above effects data have been specific to Great Smoky Mountains and Shenandoah NPs (designated Class I areas), we are concerned about similar effects at all NPS areas in the southeast, including the Blue Ridge Parkway and numerous other designated Class II areas. Protecting the natural, cultural, and historic resources of the many park system units in the region is a vital part of our mission. Consequently, we hope that with the Assistant Secretary's urging, EPA and states in the region will work with us to protect these national treasures for the enjoyment of current and future generations.

In addition to protecting NPS areas, we are also concerned about air pollution impacts on the Chesapeake Bay and its valuable living resources (i.e., its fish, shellfish, and other animals). The Chesapeake Bay Program, of which EPA is a major partner, is dealing with the problem of excess nutrients being deposited into the Bay. EPA Region III and NPS offices in the Mid-Atlantic area have entered into a Memorandum of Understanding to work cooperatively on bay program goals and actions. Sources of NO<sub>x</sub> and other nitrogen compounds lead to nitrogen deposition that affects the Bay's water quality. Approximately 25% of all the nitrogen compounds that enter the Bay are deposited from the air. The draft Chesapeake 2000 Agreement recognizes the important role that air pollution plays in excess nutrients and establishes several goals and actions to minimize and prevent air emissions throughout the airshed. Therefore, the emission reductions associated with the requested SIP revisions for states in the region would also benefit sensitive living resources in the Chesapeake Bay and related economies, and complement the efforts of the Chesapeake Bay Program.

**Conclusion.** We are very concerned about the current and future status of air quality related values at our NPS units (as well as the resources of the Chesapeake Bay), and the cumulative impacts of existing and new pollution sources on these resources. Therefore, we request that the Assistant Secretary ask EPA to find that the SIPs for individual states affecting park air quality are substantially inadequate to comply with the purposes and requirements of the PSD program under the Clean Air Act. This finding would trigger a requirement for these states to revise their SIPs now to address deficiencies and mitigate adverse existing adverse impacts. In addition, we ask that the Assistant Secretary request EPA to develop a general rule that would help restore and protect resources and values at park units Servicewide.

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