

Air Quality Monitoring Based on the Wilderness Act of 1964

The Wilderness Act of 1964 gives the BLM, FWS, FS and the NPS the responsibility to manage designated Wildernesses to preserve and protect their unspoiled character. It defines wilderness as "...an area where the earth and its communities of life are untrammeled by man..." and "... an area of undeveloped Federal land retaining its primeval character and influence..." and "...is protected and managed so as to preserve its natural conditions..." Human influence does not impede the free play of natural forces or interfere with natural processes in the ecosystem in untrammeled areas. Anthropogenic (or human-caused) air pollution can affect the untrammeled nature of wilderness.

In addition to the Wilderness Act, the Code of Federal Regulations for managing Wilderness and Primitive Areas (36 CFR 293.2) states "...National Forest Wilderness resources shall be managed to promote, perpetuate, and where necessary, restore the wilderness character of the land..."

(http://www.access.gpo.gov/nara/cfr/waisidx_04/36cfr293_04.html)

Understanding which resources can be affected by air pollution, and knowing the current status of air pollution effects on those resources is essential to protecting and restoring wilderness character. This information is used by federal and state air regulatory agencies in developing air quality laws and regulations.

Wilderness Philosophy as it Relates to Air Quality (And most everything else) By Dennis Haddow, FWS

1. Wilderness areas are not merely a commodity for human use and consumption. Wilderness ecosystems have intrinsic values other than user/public concerns.
2. A principle objective of wilderness management is to provide the wilderness user a natural experience, rather than a strictly enjoyable one. The amount of enjoyment a wilderness user has from a natural experience is purely a personal matter for the individual user to decide.
3. All Wilderness components are equally important; none is of lesser value than another.
4. A Wilderness component is important even if users of the area are unaware of its existence.
5. All life forms in Wilderness are equally important. For example, microorganisms are as essential as elk, wild flowers, or grizzly bears.
6. The goal of Wilderness management is to protect not only resources with immediate aesthetic appeal (i.e., sparkling clean streams) but also unseen ecological processes (such as natural biodiversity and gene pools.)

7. The most sensitive Wilderness components are to be emphasized more than those of “average” or “normal” sensitivity. Sensitivity is generally determined by inertia (resistance to change), elasticity (how far the component can be stretched from its natural condition without being permanently modified), and resiliency (the number of times it can revert to its natural condition after experiencing human-caused change).
8. Each Wilderness component is important in itself; as well as in terms of how it interacts with other components of the ecosystem. That is, the individual parts of the Wilderness ecosystem are as significant as the sum of the parts.
9. The physical components of the Wilderness ecosystem (for instance, lake chemistry) are as essential as its biological constituents (i.e., salamanders). That is, the earth is as essential as the community of life.
10. Wilderness components are to be protected from “human-caused change” rather than from “damage”. Terms such as “damage” and “harm” are prejudicial, whereas “human-caused change” is value-neutral. (For example, deposits of nitrogen in a lake from nitrogen oxide, a common air pollutant, might result in more plant growth and larger fish. This would, however, be an unnatural – and therefore unacceptable – change in the aquatic ecosystem).
11. The goal of Wilderness management is to protect natural conditions, rather than the conditions when first monitored. That is, if initial monitoring in a Wilderness area identifies human-caused changes, appropriate actions should be taken to remedy them in order to move towards a more natural condition.
12. The designation of a Wilderness as Class I or II does not dictate the management goals for it; these are identified in the enabling legislation. The designation only determines which options are available to meet the goals. Class I Wildernesses, for instance, can be protected through air quality related value (AQRV) analysis, whereas the protection of Class II Wildernesses can be achieved using best available control technology (BACT) requirements.
13. While it may not be possible to manage every Wilderness in a natural or near-natural state, each should be managed in as pristine a condition as the specific (local) biophysical, legal, scientific, and social/political situation will allow. That is, FLMs will do the best job possible of Wilderness management, based on local constraints and opportunities. The extent of actual protection, therefore, may vary.
14. Although monitoring is critical to many air resource management decisions, it must not interfere needlessly with Wilderness management. Where possible, the most intrusive monitoring and instrumentation should be conducted adjacent to the Wilderness – if such areas adequately represent the area of concern.

Wilderness Stewardship Principles (Wilderness Management, Hendee 1990)

The Wilderness Stewardship Principles highlighted in *blue italics* are particularly relevant to management of air quality in wilderness.

➤ *Manage wilderness as one extreme on the environmental modification spectrum*

- Manage wilderness as a composite resource, not as separate parts
- Manage wilderness, and sites within, under a non-degradation concept
- Manage human influences, a key to wilderness protection
- Manage wilderness to produce human values and benefits
- Favor wilderness-dependent activities
- Guide management with written plans that state objectives for specific areas
- Set carrying capacities as necessary
- Focus on threatened sites and damaging activities
- Apply only minimum regulations and tools necessary to achieve objectives
- Involve the public as a key to acceptance and success of wilderness management
- Monitor conditions and experience opportunities for the long-term
- Manage in conjunction with adjacent lands

**Four Cornerstones of Wilderness Stewardship (Arthur Carhart National
Wilderness Training Center, 2003)**

The Four Cornerstones of Wilderness Stewardship highlighted in *blue italics* are relevant to air resource management in wilderness.

1. Manage wilderness as a whole.
2. *Preserve wildness and natural conditions.*
3. *Protect wilderness benefits.*
4. Provide and use the minimum necessary.