

The grassy bald surrounding the old Bone Valley settlement is another notable view. Footings still mark the location of buildings that have long since vanished. A restored cabin nestled in the woods creates an indelible image. The remnants of the former town offer a glimpse of its bustling past in the early 1900s. Similar scenes are located within the former town of Proctor.

3.10.1 Scenic Byways

NC 28 in the study area is part of the Indian Lakes Scenic Byway designated by the NCDOT. North Carolina Scenic Byways are selected based on natural, cultural, and historic features along the route. They embody the diverse beauty and culture of the state and provide travelers with a safe and interesting alternate route. The Indian Lakes Scenic Byway is named for the many lakes with Native American names along its path. It traverses roughly 60 miles (97 km) from Almond, through Fontana Village, to Tapoco and Topton. The Indian Lakes Scenic Byway connects into the Nantahala Byway that travels along US 19/US 74/US129 from Whittier to Marble, North Carolina. The Nantahala Byway traverses 43 miles (69 km) in Cherokee, Jackson, Swain, and Graham counties (NCDOT 2001).

3.11 Air Quality

3.11.1 Regulatory Status

The USEPA and the North Carolina Department of Environment and Natural Resources (NCDENR) are responsible for protecting air quality within the state. The USEPA established criteria for evaluating air quality in accordance with the 1970 Clean Air Act (CAA) and 1990 CAA Amendments. Two National Ambient Air Quality Standards (NAAQS), primary and secondary, were established for defining air quality. Primary standards refer to air quality levels required to protect public health with an adequate margin of safety. Secondary standards or welfare standards refer to air quality levels required to safeguard visibility, comfort, animals, and property from the deleterious affects of poor air quality. NAAQS were established for the following six air pollutants (criteria pollutants): carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), ozone (O₃), and particulate matter (PM). Particulate matter includes those particles with diameters of roughly 0.0004 inches (10 μm) or less in size (PM 10) and 0.0001 inches (2.5 μm) or less in size (PM 2.5). The NAAQS are shown in Table 32. The state of North Carolina has adopted these same standards. Also shown in Table 32 are monitored values of O₃, PM 10, PM 2.5, and SO₂ from an air quality monitoring site in Bryson City on Center Street. Monitored values for CO, NO₂, and Pb are not shown, as these pollutants are not monitored in the vicinity of the study area. Although the monitored values can be compared to the NAAQS, the values may not be representative of the air quality throughout the entire study area.

Table 32
NAAQS and Monitored Concentrations for Criteria Pollutants

Pollutant	Type of Standard	Averaging Time	Standard Value**	Monitored Value	Location
Carbon Monoxide (CO)	Primary	8-hour* 1-hour*	9 ppm (10 mg/m ³) 35 ppm (40 mg/m ³)	-----	-----
Nitrogen Dioxide (NO ₂)	Primary and Secondary	Annual Arithmetic Mean	0.053 ppm (100 µg/m ³)	-----	-----
Ozone (O ₃)	Primary and Secondary	8-hour^ 1-hour^	0.08 ppm (157 µg/m ³) 0.12 ppm (235 µg/m ³)	0.074 ppm 0.091 ppm	Bryson City Bryson City
Particulate Matter (PM 10)	Primary and Secondary	Annual Arithmetic Mean	50 µg/m ³	21 µg/m ³	Bryson City
		24-hour	150 µg/m ³	100 µg/m ³	Bryson City
Particulate Matter (PM 2.5)	Primary and Secondary	Annual Arithmetic Mean	15 µg/m ³	13.4 µg/m ³	Bryson City
		24-hour	65 µg/m ³	30.9 µg/m ³	Bryson City
Sulfur Dioxide (SO ₂)	Primary	Annual Arithmetic Mean	0.030 ppm (80 µg/m ³)	0.0016 ppm	Bryson City
		24-hour	0.14 ppm (365 µg/m ³)	0.008 ppm	Bryson City
	Secondary	3-hour	0.50 ppm (1,300 µg/m ³)	0.013 ppm	Bryson City
Lead (Pb)	Primary and Secondary	Quarterly Average	1.5 µg/m ³	-----	-----

* Not to be exceeded more than once per year.

^ To attain the 8-hour standard, the 3-year average of the fourth-highest daily maximum 8-hour average of continuous ambient air monitoring data over each year must not exceed the standard value. To attain the 1-hour standard, the daily maximum 1-hour average concentration measured by a continuous ambient air monitor must not exceed the standard value more than once per year, averaged over 3 consecutive years.

** Parenthetical value is an approximately equivalent concentration. Units of measure for the values are parts per million (ppm) by volume, milligrams per cubic meter of air (mg/m³), and micrograms per cubic meter of air (µg/m³).

Sources: www.epa.gov/airs/criteria.html USEPA, Air Quality System Quick Look Report 2000, 2001, and 2002

According to NCDENR, Swain and Graham counties are currently classified as attainment areas for all criteria pollutants. Attainment areas are considered to have air quality that meets or exceeds the NAAQS. The USEPA is currently reviewing an NCDENR recommendation to classify the North Carolina side of GSMNP, including portions of the study area, as an 8-hour ozone nonattainment area. The final designation will be made April 15, 2004. A

nonattainment area is an area where pollution levels have exceeded the NAAQS. This designation requires that these areas implement strategies to improve air quality. Results from ozone monitoring at Clingmans Dome in Tennessee and at Barnett Knob in North Carolina show that both locations do not meet the 8-hour ozone NAAQS. Both monitoring locations border Swain County, North Carolina, and can be indicative of air quality in the study area.

3.11.2 The Clean Air Act and Class 1 Areas

The CAA passed in 1970 established national policy to preserve, protect, and enhance air quality. The 1977 CAA Amendments established the Prevention of Significant Deterioration (PSD) Class 1 area. All national parks that exceed 6,000 acres (2,428 ha) in size are designated Class 1 areas, including GSMNP. Class 1 areas are afforded the greatest degree of air quality protection under the Act. Pollution increments have been set for sulfur dioxide, particulate matter, and nitrogen oxides within the Class 1 areas. New or expanding facilities that will potentially affect the air quality of a Class 1 area must prove that they will not cause pollutant concentrations to go above these increments. In addition, Federal land managers (FLMs) have the responsibility to protect the quality of air in Class 1 areas. Reviewing permits for new and expanding sources of air pollution is part of their responsibility. This review process allows the FLMs the opportunity to comment on whether these new sources of pollution will adversely affect the air quality of nearby Class 1 areas.



Air Quality

Protecting the air quality of Class 1 areas, specifically GSMNP, is difficult because most of the air pollutants threatening the park, are emitted outside the park. Due to prevailing air currents and the terrain of the region, pollutants from industrial developments in the Tennessee, Ohio, and Mississippi river valleys are trapped and concentrated in the southern Appalachians. In addition, pollutants from the Northeast, Southeast, and Midwest threaten the air quality of the region.

Sulfur dioxide and nitrogen oxides, emitted from the burning of fossil fuels, are responsible for the majority of air quality impacts. These emissions convert to harmful secondary pollutants (e.g. sulfate, nitrates, and ozone). Ozone pollution is responsible for injuring vegetation. In addition, acid deposition is adversely affecting streams and soils in the Noland Divide Watershed in Swain County. In fact, the Noland Divide receives a higher deposition of nitrogen and sulfur than any other monitored location in North America. The degradation

of these resources is impacting aquatic as well as terrestrial resources. Furthermore, visitor enjoyment and human health are also jeopardized by poor air quality in the area. Visibility at GSMNP has been greatly degraded due to air pollution during the last 50 years. The average visibility range at scenic views is currently 25 miles (40.2 km), when historically it was over 110 miles (177 km) (NPS 2001d).

3.12 Noise

Dominant sounds throughout the study area include wind, thunder, and moving water as well as those sounds produced by animals, such as mating calls. These sounds comprise the natural soundscape. Human-caused sound from such sources as traffic or motorized equipment can degrade the natural soundscape. Preservation of the natural soundscape is a goal of the NPS. The natural soundscapes throughout the study area provide an intrinsic value, which adds to the solitude and unique experience it presents.

This report utilizes the Leq noise descriptor. The equivalent sound pressure level, Leq (A-weighted), is formulated in terms of the equivalent steady-state noise level, which in a defined period of time contains the same noise (acoustic) energy as a time-varying noise during the same period of time. The Leq is an energy summation integration and, as such, does not rely on statistical parameters like the L₁₀ scheme. Leq has a significant advantage over the L₁₀ scheme since the L₁₀ scheme cannot adequately consider single event noises.

As part of this evaluation, current noise levels were determined in the study area. Ambient noise measurement sites are shown in Figure 19 and are listed in Tables 33 and 34.

3.12.1 Characteristics of Noise

Noise is basically defined as unwanted sound. It is emitted from many sources, including airplanes, factories, railroads, power generation plants, and traffic. Traffic noise is usually a composite of several vehicle noise sources. These sources include the vehicle engine exhaust, drive train, and interaction of tires with the roadway causing noise due to friction.

The magnitude of noise is usually described by its sound pressure. Since the range of sound pressure varies greatly, a logarithmic scale is used to relate sound pressures to some common reference level, usually the decibel (dB). Sound pressures described in decibels are called sound pressure levels and are often defined in terms of frequency weighted scales (A, B, C, or D).

The A-weighted scale approximates the frequency response of the human ear by placing most emphasis on the frequency range of 1,000 to 6,000 Hertz. Because the A-weighted scale