

2.0 OBJECTIVES

The primary objective of this assessment is to build on the SAMI Phase I Assessment results in order to provide a model-based qualitative and quantitative evaluation of the effects of atmospheric sulfur and nitrogen deposition on aquatic resources in the southern Appalachian Mountains. There are a number of components of this assessment, and therefore a number of secondary objectives. The area of interest has been restricted to the boundary of the SAMI domain. Particular emphasis was placed on characterizing the responses of aquatic resources in ten Class I areas that occur within the SAMI domain:

- Great Smoky Mountains National Park - Tennessee-North Carolina border
- Shenandoah National Park -Virginia
- Sipsey Wilderness Area - US Forest Service, northwestern Alabama
- Cohutta Wilderness Area - US Forest Service, northern Georgia
- Shining Rock Wilderness Area - US Forest Service, western North Carolina
- Joyce Kilmer - Slickrock Wilderness Area - US Forest Service, western North Carolina
- Linville Gorge Wilderness Area - US Forest Service, western North Carolina
- James River Face Wilderness Area - US Forest Service, Virginia
- Dolly Sods Wilderness Area - US Forest Service, West Virginia
- Otter Creek Wilderness Area - US Forest Service, West Virginia

The aquatic component of the assessment was conducted with the MAGIC model. The principal objectives of the aquatic assessment were to:

1. provide estimates of future changes in streamwater chemistry of potentially acid-sensitive streams in the SAMI region, including population-based estimates, in response to multiple sulfur and nitrogen Emissions Control Strategies provided by SAMI;
2. provide quantitative estimates of future changes in streamwater chemistry of potentially acid-sensitive streams within the Class I areas in the SAMI domain for which there are adequate model-input data; provide these estimates of change in response to multiple sulfur and nitrogen Emissions Control Strategies provided by SAMI;
3. evaluate the relationships between the sensitivity of streams to future changes in acid-base chemistry and features of the landscape that can be expressed regionally with existing data throughout the SAMI domain; to the extent possible, classify the aquatic resources within the SAMI domain in terms of their sensitivity to change in acid-base chemistry and map the results of this classification.

Thus, this assessment for aquatic systems contains a regional component for the entire SAMI domain (objectives 1 and 3) and a component specific to the Class I areas that occur within the SAMI region (objective 2).