WATER FACT SHEET

U.S. GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR

WATER-QUALITY STUDIES IN THE CATSKILL REGION OF NEW YORK

As America's largest water-science and water-information agency, the U.S. Geological Survey (USGS) is conducting water-quality investigations of the nation's ground-water and surface-water resources. These studies provide public officials and interested citizens with the information necessary to formulate and evaluate water-management strategies for those resources.

In the 1970s, concern about the effects of acidic precipitation on water quality in mountain lakes and streams led to the initiation of many USGS studies throughout the United States. Research in the Catskill region of southeastern New York began in 1983 at Biscuit Brook in the headwaters of the West Branch Neversink River. Work to date has included studies of the spatial variation in water quality of streams and precipitation and detailed investigations of the variability of stream-water quality during rainstorms and snowmelt. Recent work has also included studies of the effects of acidic precipitation on aquatic-insect and fish communities.

Currently, the USGS has three active water-quality investigations in the Catskill region. These are funded jointly by the USGS and local agencies, and all published reports and data are available to the public through the USGS office in Albany, NY.

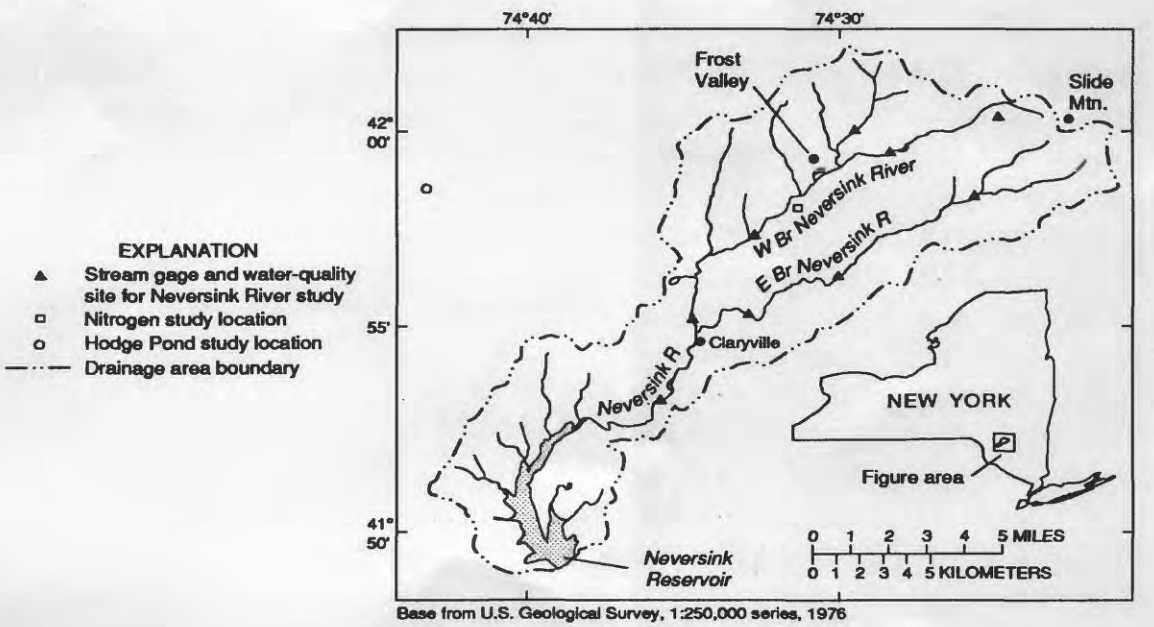

Figure 1.--Location of study sites in the Catskill Region of New York.

Neversink River Basin Study

The Neversink River (fig. 1) flows into the Neversink Reservoir, a public water supply for the City of New York. The river is also used for recreation and fishing. Research has shown that the Neversink watershed contains some of the most acidic waters in the Catskill region. In the spring, melting snow carries nitric acid and aluminum from the soil to streams, causing increased concentrations that result in stress to fish populations. Much of the past work in the basin has been limited to studies of headwater streams. The primary objective of this study, however, is to document how and why streamwater quality changes between the headwaters and the Neversink Reservoir. Flow is to be measured and water samples collected for chemical analysis during a 3-year period at 10 sites throughout the watershed. Detailed investigations include studies of fish-community response to acid stress, how the movement of water through hillslope soils affects stream-water quality, and the role of streambed sediment in the transport of chemical constituents.

Nitrogen Study

Research by the USGS in Catskill streams in the 1980s has shown that increases in nitric acid concentrations in streams during rainstorms and snowmelt are a major contributor to the acidification of streams. Identification of the causes of changes in stream nitrate concentrations will require information on the processes that affect the movement of nitrogen compounds through watersheds. The primary control of nitrogen movement in a watershed is the forest vegetation, which takes up nitrate and ammonia as nutrients. During this study, an area of forest is to be logged as a part of the Frost Valley YMCA forestry-management program. This study, in conjunction with the logging, will identify the processes that control nitrogen movement through the watershed. About 40 percent of the trees will be cut and removed from a 110-acre tract in the watershed of the West Branch Neversink River (fig. 1), and all of the trees will be cut and removed from an adjacent 35-acre tract. Samples of ground water, soil water, soil gases, and stream water will be collected from the logged sites for 2 years before the cut and for 4 years thereafter.

Hodge Pond Study

Hodge Pond (fig. 1) is an 18-acre pond at an elevation of 2,600 feet in the southwestern Catskills. Although the low acid-neutralizing capacity of the pond water indicates that the pond is sensitive to acidic deposition, prediction of its long-term sensitivity to future acidic deposition requires data on the hydrological, ecological, and geochemical processes that occur in the pond watershed. Sixteen wells, in addition to several gages to monitor rainfall, pond-water level, and pond outflow have been installed. Water-quality samples are collected from the wells, the pond, the pond outlet, and springs to provide data for study of the biologically influenced geochemical processes that occur in the watershed. Three years of data collection are planned, but the study could continue longer if the site proves suitable for collection of data on long-term water-quality changes that result from acidic precipitation.

Information on these and related studies can be obtained from:

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