

examples of observed effects may include fish kills where the cause was indeterminate or secchi disk readings. Though not impairments of water quality standards, observed effects are nevertheless useful for water quality managers to track.

For this reporting period, only pollutants or nonpollutants which exceeded water quality criteria due to naturally occurring conditions were flagged as observed effects in the ADB. As explained in Section 3.1.8, exceedances of water quality criteria due to naturally occurring conditions are not considered violations (i.e., impairments) of the water quality standards. Conditions which were considered naturally occurring for this reporting cycle are discussed in Section 3.1.8.

### 3.1.8 "Naturally Occurring" Water Quality Exceedances

In New Hampshire, exceedances of most water quality criteria due to naturally occurring conditions are not considered violations of the water quality standards. According to Env-Ws 1702.29 of the State's surface water quality regulations (NHDES, 1999), naturally occurring conditions means "conditions which exist in the absence of human influences."

Examples given by EPA (USEPA, 1997) of what might be considered naturally occurring conditions, include the following:

- Saline water due to natural mineral salt deposits
- Metals due to naturally occurring deposits
- Low dissolved oxygen (DO) or pH caused by poor aeration or natural organic materials, where no human-related sources are present or where impairment would occur even in the absence of human activity
- Excessive siltation due to glacial till or turbidity due to glacial flour, where such siltation is not caused by human activity or where impairment would occur even in the absence of human activity
- Habitat loss or pollutant loads due to catastrophic floods that are excluded from water quality standards or other regulations.
- High temperature, low DO, or high concentrations of pollutants due to catastrophic droughts with flows less than design flows in water quality standards.

The level of documentation needed to determine if the source is natural is dependent on the pollutant. Mathematical analyses or computer modeling, for example, may be needed for estimating natural levels of dissolved oxygen in some cases. On the other hand, a simple field reconnaissance may suffice to determine if a bacteria exceedance is likely due to man's activities or to wildlife. In either case, documentation is needed to support the "natural" determination.

For this assessment, only the following three conditions were considered naturally occurring (see Section 3.2.4):

- low pH caused by naturally occurring organic acids, where the presence of organic acids is based on color measurements as described in Section 3.2.4,
- Aluminum exceedances due to naturally occurring low pH (low pH can solubilize naturally occurring metals such as aluminum in sediments, resulting in increased water column concentrations),

- pH values greater than 8.0 but less than or equal to 8.5 in tidal waters unless there was evidence to indicate the elevated pH levels were due to human activity.

Although there are other exceedances that are suspected to be of natural origin (such as bacteria exceedances due to wildlife), the source was listed as unknown for this cycle since a process has not yet been clearly defined for determining when the source can be considered natural. As more processes for determining natural occurring conditions are developed and implemented, it is expected that the number of waterbodies with exceedances attributed to natural sources will increase.

Currently, the ADB is not set up to specifically address situations where water quality standards allow for excursions of criteria due to natural sources. As previously mentioned, such exceedances are not, by definition, violations of the water quality standards. Consequently, it is not appropriate to assess such waters as impaired in the ADB. Nevertheless, water quality managers find it very useful to keep track of waters with naturally occurring water quality exceedances. For this reporting cycle, this was done by assigning the pollutant or nonpollutant as an Observed Effect (rather than an impairment) in the ADB. For more information on Observed Effects, see Section 3.1.7.

### 3.1.9 Data Sources

In July 2005, a request for data/information for the 2006 305(b)/ 303(d) submission was sent to the following organizations and was placed on the DES website for the general public ([www.des.state.nh.us/wmb/swqa](http://www.des.state.nh.us/wmb/swqa)). The request included guidance and a form to facilitate electronic or mailed submissions.

Appalachian Mountain Club  
Audubon Society  
Connecticut River Joint Commissions  
Conservation Law Foundation  
County Conservation Districts  
Manchester Conservation Commission  
Merrimack River Watershed Council  
National Park Service  
Natural Resources Conservation Service  
New Hampshire Lakes Association  
New Hampshire Rivers Council  
North Country Council  
Regional Planning Commissions  
Society for the Protection of National Forests  
Souhegan River Watershed Association  
The Nature Conservancy  
University of New Hampshire (UNH)  
Upper Merrimack River Local Advisory Committee  
U.S. Environmental Protection Agency  
U.S. Geological Survey  
U.S. Fish and Wildlife Service