

State's Surface Water Quality Regulation. These limits are the same as those in the existing permit and so are in accordance with antibacksliding requirements. The permittee has been able to achieve consistent compliance with these limitations.

#### **D. Non-conventional and Toxic Pollutants**

Water-quality based limits for specific toxic pollutants such as chlorine, ammonia, etc. are determined from chemical-specific numeric criteria derived from extensive scientific studies. The specific toxic pollutants and their associated toxicity criteria are popularly known as the "Gold Book Criteria" which EPA summarized and published in Quality Criteria for Water, 1986, EPA 440/5-86-001 (as amended). Each criteria consists generally of two values--an acute criteria to protect against short-term effects, such as death, and a chronic criteria to protect against long-term effects, such as poor reproduction or impaired growth. The State of New Hampshire adopted these "Gold Book Criteria", with certain exceptions, and included them as part of the State's Surface Water Quality Regulations adopted on December 3, 1999. EPA uses these pollutant-specific criteria along with available dilution in the receiving water to determine the draft permit limits for specific pollutants. The calculations for available dilution and for specific water-quality based limits for pollutants such as total residual chlorine, whole effluent toxicity and metals are discussed below under separate subheadings.

##### Available Dilution

Available dilution of the receiving water is determined using the facility's design flow and the annual 7-day mean low flow at the 10-year recurrence interval (7Q10) of the receiving water just above the facility's outfall. The available dilution is reduced by 10 percent to account for the State's reserve capacity rule. The State's requirement to reserve 10 percent of the Assimilative Capacity of the receiving water for future needs is pursuant to New Hampshire's Surface Water Quality Regulations Env-Ws 1705.01.

Frequently, an exact value of the 7Q10 at the outfall is not available; therefore, 7Q10 flow(s) from gauged location(s) either on the receiving water or on nearby river(s) thought to have similar hydrologic characteristics as the receiving water are sometimes used to estimate a 7Q10 flow for the facility. However, in this case, Manchester's POTW is located immediately downstream of a U.S. Geological Survey's (Survey) gauging station on the Merrimack River near Goffs Falls, below Manchester with no significant surface water inflows between the POTW and the gauging station. Therefore, the 7Q10 flow at the facility is set as identical to that at the gauging station. See **Attachment D** for relevant data.

The existing permit used a 7Q10 value of 652.14 cfs measured during the period of 1936 – 1992. Most recent 7Q10 value is measured at 638.65 cfs during the period of 1941 – 2006. Using the updated 7Q10, the available dilution (also referred to as dilution factor) in the receiving water has slightly decreased, from 12.1 to 11.82. See **Attachment D** for the dilution factor calculations.

##### Total Residual Chlorine