

### 3.1.18 Magnitude of Exceedance Criteria (MAGEXC)

The 10% Rule discussed in the previous section provides a reasonable tool for determining the minimum number of water quality violations needed to assess a water as impaired under most conditions (i.e., when sample exceedances are generally within the range of sampling and analysis error). It does not, however, account for situations where water quality criteria are exceeded by large amounts and it is obvious that there is an impairment. In such cases, just a few samples should be needed to make an impairment decision.

To address these situations, "Magnitude of Exceedance Criteria" (MAGEXC) were established for many of the assessment parameters presented in Section 3.2. As shown in Section 3.2, MAGEXC are typically set well beyond the standard water quality criteria or as a function of measurement precision +/- the standard criteria; consequently when MAGEXC criteria are exceeded, one can be reasonably confident that there is an exceedance of the water quality criteria. As a general rule, if two or more samples exceeded the MAGEXC, waters were assessed as impaired (i.e., not supporting), regardless of the total number of samples taken.

### 3.1.19 7Q10 Low Flow and Mixing Zone Criteria

*7Q10 low flow:* According to Env-Ws 1705.02 of the State's surface water quality regulations (NHDES, 1999), the flow used to calculate permit limits (i.e., NPDES permits for wastewater discharges) for aquatic life criteria and human health criteria for non-carcinogens, shall be the 7Q10 low flow, which is the average seven day low flow that occurs, on the average, once every ten years. This implies that water quality criteria for human health and non-carcinogens do not apply at flows below the 7Q10 in waters receiving wastewater discharges. Consequently, assessment of surface waters downstream of wastewater discharges were only based on samples taken when river flows were at or above the 7Q10 low flow, as determined by DES.

*Mixing Zones:* Env-Ws 1702.27 of the State's surface water quality regulations (NHDES, 1999), defines a mixing zone as the a defined area or volume of the surface water surrounding or adjacent to a wastewater discharge where the surface water, as a result of the discharge, might not meet all applicable water quality standards. Mixing zones are prohibited in Class A waters (Env-Ws 1707.01(a)) but are allowed in Class B waters, where designated by DES, if they meet the conditions stipulated in Env-Ws 1707.02 (Minimum Criteria) and Env-Ws 1707.03 (Technical Standards).

Consistent with the above, water quality data used to make assessments were based on samples taken outside of DES designated mixing zones for wastewater treatment facilities. For wastewater treatment facilities where DES has not yet designated an official mixing zone, water quality data used for assessment purposes were from samples taken at least 500 feet downstream of the WWTF discharge.

### 3.1.20 Use of Predictive Models

A waterbody with potential violations based on predictive modeling, was assessed as threatened instead of impaired (not supporting), to reflect the fact that the violation is predicted