**The Arizona Nitrogen Removal Program**

The Arizona Department of Environmental Quality manages the NPDES surface water discharge and ground water discharge programs. Based on communication with the Arizona Department of Environmental Quality permitting and water quality planning staff there are five municipal or publicly owned (POTW) NPDES major dischargers, (over one million gallon per day average flow) that are using a supplemental carbon source on a regular or intermittent basis to achieve total nitrogen or nitrate nitrogen limits at this time.

The Arizona Department of Environmental Quality published in 2009, “The Arizona Water Quality Standards (Arizona Administrative Code, Title 18 Chapter 11) include narrative and numeric nutrient criteria for nitrogen and phosphorus. The standards were established for lakes and reservoirs with a target of 1.2-1.4 mg/l total nitrogen for the water body. Specific rivers were also included in the water quality standards as follows: Verde River, Black River, Salt River, Little Colorado River and portions of the Colorado River. The instream limits for the aforementioned rivers range from 0.75 mg/l -2.5 mg/l total nitrogen. In order to meet the instream and lake nutrient standards some of the NPDES discharge permits include variances to meet the water quality criteria in Arizona.

Generally the NPDES permits include both concentration and mass load effluent limitations for phosphorus and nitrogen that are applied year round. Arizona applies an annual mean or 90th percentile limitation rather than a monthly or weekly average. The Arizona NPDES permitting program allows the inclusion of variances for wastewater treatment plants that cannot meet the low effluent nutrient limits.

The variances do not presently have a final completion data to achieve the very low nutrient discharge that in some cases are below the limit of technology for nitrogen and phosphorus. The Arizona Department of Environmental Quality has not established a schedule for implementation of the final limits and the established variances will be included in future permit renewal cycles.

The following NPDES permits are using supplemental carbon at present in Arizona: City of Mesa (methanol), City of Chandler (glycerin), City of Flagstaff (glycerin) at two wastewater facilities) and the International Border WWTF in Nogales (glycerin). The largest wastewater treatment facilities in Arizona for the cities of Phoenix and Tucson do not need a supplemental carbon source to meet effluent limits.

With the arid climate of Arizona many wastewater treatment facilities discharge significant portions of their treated effluent to beneficial reuse. Reuse wastewater of ground water discharges generally require a total nitrogen limit of 10 mg/l. This limit does not require the use of supplemental carbon at most wastewater treatment facilities.

There are no major food processing or industrial facilities in Arizona that have an individual nitrogen limit. The industrial facilities that have nitrogen in their effluent discharge to a municipal wastewater treatment facilitiy.