

CHAPTER 3 EFFLUENT LIMITATIONS

Effluent limitations are based on the water use objectives and water quality standards that are developed to achieve the desired results. In Wisconsin, these objectives and standards are established by Federal, State, and regional agencies and are administered through the Wisconsin Pollutant Discharge Elimination System (WPDES). Under this system, the WDNR issues WPDES permits to each discharger in the State, setting forth the effluent limitations that must be met.

This chapter briefly reviews Federal and State water use objectives and water quality standards, the water quality of the receiving stream, and the current and proposed WPDES permits and related effluent limitations.

WATER USE OBJECTIVES AND WATER QUALITY STANDARDS

Recognizing the need for a nationwide approach to water quality, the U.S. Congress, through the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500), declared its objective to restore and maintain the chemical, physical and biological integrity of the nation's waters. Congress also required the establishment of water quality standards for all waters consistent with the applicable requirements of the Act.

The Wisconsin Legislature, in Chapter 281 of the Wisconsin Statutes, recognized that different standards should be required for different waters. Wisconsin water use objectives and water quality standards have been identified and cited in Chapters NR 102 through NR 106 of the Wisconsin Administrative Code with amendments and revisions created as needed.

The Rice Lake WWTP discharges to the Red Cedar River within the Brill and Red Cedar Rivers watershed in the lower Chippewa River Basin in Barron County. The Red Cedar River is classified by the WDNR to meet the water quality standards for "Fish and Aquatic Life" and "Warm Water Sport Fishery" and is subject to effluent limitations in NR 210.05(1). The Red Cedar River is listed on Wisconsin's 2008 Impaired Waters list (303d listed), with impairments listed as low dissolved oxygen and contaminated fish.

DISHCHARGE PERMIT REQUIREMENTS

Public Law 92-500 requires a National Pollutant Discharge Elimination System (NPDES) permit for any point source discharge of pollutants into the nation's navigable waters. Chapter 283 of the Wisconsin Statutes authorizes the DNR to “establish, administer and maintain a state pollutant discharge elimination system.” This permit system, known as WPDES, conforms to the objectives and requirements of Public Law 92-500. The State of Wisconsin has expanded the permit system beyond the navigable waters concept by applying it to all of the State’s receiving waters.

On September 11th, 2002, the City of Rice Lake was issued WPDES Permit Number WI-0021865-07-0, allowing the WWTP to discharge effluent into the Red Cedar River. The permit had an expiration date of December 31st, 2007.

At present the WDNR has issued a draft permit proposed for reissuance. The public notice was for permit reissuance was published on April 15, 2009. A copy of the draft permit is included in the Appendix. The BOD₅ effluent limit was changed to a 5-day carbonaceous biochemical oxygen demand (COD₅) limit. Due to ammonia levels and nitrifying bacteria in the effluent, the plant’s BOD₅ levels are significantly higher than its CBOD₅ levels. The limit change was based on paired testing regime undertaken by the Utility.

Table 3-1 lists the proposed effluent limits. Based upon NR 210 Code, seasonal disinfection is required from May 1st to September 30th of each year. The disinfection requirement includes a fecal coliform limit of 400/100 ml, based on a 30-day geometric mean. Also, because the treatment plant uses chlorine as a disinfection method, the permit contains a daily maximum limit on the total residual chlorine. Whole Effluent Toxicity (WET) Testing is required once per year during rotating quarters. A maximum daily limit for mercury has been established as an alternate effluent limit, with the implementation of a pollutant minimization program. The permit allows for future modification to include mass limits for phosphorus that will be set as part of the Red Cedar River TMDL report.

**Table 3-1
Rice Lake WWTP
Proposed Effluent Limitations
Draft Permit (April 2009)**

Effluent Parameters	Current Limitations
CBOD ₅ , Total Monthly Average Weekly Average	 25 mg/L 40 mg/L
Suspended Solids Monthly Average Weekly Average	 30 mg/L 45 mg/L
pH Field Daily Maximum Daily Minimum	 9.0 su 6.0 su
Total Residual Chlorine Daily Maximum	 38 µg/L
Fecal Coliform Geometric Mean	 400 #/100 ml
Total Phosphorus Monthly Average	 1.5 mg/L
Mercury, Total Recoverable Daily Max	 7.0 ng/L