

Chapter 3 - Point Source Permits

Element 3. Ensure Effectiveness of Point Source Permits in Targeted/Priority Sub-watersheds for Wastewater facilities, CAFOs, and Urban Storm Water

3.1 EPA and Gulf Hypoxia Task Force Expectations

EPA's expectation emphasizes ensuring that point source control permits in targeted or priority watersheds are effective with respect to:

- "A. Municipal and Industrial Wastewater Treatment facilities that contribute to significant and measureable N & P loadings,
- "B. All Concentrated Animal Feeding Operations (CAFOs) that discharge or propose to discharge, and/or
- "C. Urban Storm water sources that discharge into N & P- impaired waters or are otherwise identified as a significant source [of nitrogen and phosphorus]."

3.2 Wisconsin's Approach

Wisconsin conducts a statewide water quality permit program to control phosphorus contributions from municipal and industrial wastewater treatment facilities, concentrated animal feeding operations (CAFO), and urban storm water sources. The Wisconsin Pollutant Discharge Elimination System (WPDES) permit program is established by Chapter 283, Wisconsin Statutes, and delegated authority to administer the federal Clean Water Act permit program. WPDES permits are issued by the DNR Bureaus of Water Quality and Watershed Management, with federal oversight from EPA. Wisconsin's Office of the Attorney General provides legal resources for enforcement. Permits for groundwater discharges are issued under state law. DNR is responsible for the issuance, reissuance, modification, and enforcement of all WPDES permits issued for discharges into the waters of Wisconsin, except discharges occurring on Native American lands which are regulated directly by EPA.

Wisconsin regulates discharges to both groundwater and surface water. Facilities discharging wastewater from a specific point (end of a pipe) must meet either the federal minimum requirements for secondary treatment for municipalities and technology-based categorical (or base level) limits for industries; or, the discharges must meet levels necessary to achieve water quality standards, whichever is more stringent. Land disposal systems also receive permits with limits established to protect groundwater.

WPDES permits contain all the monitoring requirements, special reports, and compliance schedules appropriate to the facility in question. Permits are issued for five-year periods as either individual or general permits. Individual WPDES permits are issued to municipal and industrial facilities discharging to surface water and/or groundwater. Approximately 350 industrial facilities and approximately 650 municipalities hold individual WPDES permits.

General WPDES permits are issued for specific categories of industrial, municipal and other wastewater discharges. DNR may issue WPDES general permits applicable to categories or classes of point source discharges. When a general permit is issued, many facilities meeting its requirements may be covered under the same general permit. Several WPDES general permit categories have the potential to influence nutrient loads, including: land application of by-product solids, industrial sludge, and industrial waste; pit/trench dewatering; Sanitary Sewer Overflows (SSO) from Sewage Collection Systems, and more (see <http://dnr.wi.gov/topic/wastewater/Permits.html>).

WPDES permit information is available at: <http://dnr.wi.gov/topic/wastewater/PermitLists.html>. Locations of permit discharges may be found on the DNR surface water data viewer at: <http://dnr.wi.gov/topic/surfacewater/swdv/>

3.2.1 Permits for Municipal and industrial wastewater treatment facilities

Phosphorus

Wisconsin, through the provisions of Chapter NR 217, Wis. Adm. Code (hereafter in this chapter referred to as ch. NR 217) has technology-based phosphorus limits that have been in effect since the early 1980s for the Great Lakes basin and statewide since 1993. Wisconsin enacted additional administrative rules for phosphorus water quality standards criteria and resulting water quality based effluent limits in 2010.

Subchapter 2 of NR 217, Wis. Adm. Code, regulates technology based limits enacted in 1992. Wisconsin's publically owned treatment works and privately owned domestic sewage works that discharge more than 150 pounds of total phosphorus per month have been limited to a 1 mg/L effluent concentration or an alternative limit as a monthly average for more than two decades. An effluent limitation equal to 1 mg/L total phosphorus or an alternative limit as a monthly average also applies in certain cases. These cases are where the discharge of wastewater from all outfalls of a facility other than those subject to ch. NR 210, Wis. Adm. Code (generally non-municipal), contains a cumulative total of more than 60 pounds of total phosphorus per month. The 1 mg/L discharge limit is a Technology Based Effluent Limit (TBEL). The intent of technology-based effluent limits is to require a minimum level of treatment of pollutants for point source discharges based on available treatment technologies, while allowing the discharger to use any available control technique to meet the limits. Since 1993 there has been about a 67% reduction in phosphorus discharged from wastewater facilities in the Mississippi River basin as a result of complying with the technology based requirements and a 54% reduction in the Great Lakes Basin.

Some WPDES permits now include a water quality based effluent limit (WQBEL), based on the quality of the receiving water, rather than available treatment technologies. These provisions became effective in 2010 and have been approved by EPA as part of the delegation agreement. In order to ensure the protection of water quality and the designated uses of the receiving water, WQBELs may be more stringent than technology-based effluent limits. As specified in ch. NR 217, Wis. Adm. Code, a WQBEL may be used in WPDES permits if the following conditions are met:

- When the discharge from a point source contains phosphorus at concentrations or loadings that will cause, has the reasonable potential to cause, or contribute to an exceedance of the

criteria in s. NR 102.06, Wis. Adm. Code, in either the receiving water or downstream waters; and

- The technology based effluent limitation is less stringent than necessary to achieve the applicable water quality standard for phosphorus in s. NR 102.06, Wis. Adm. Code.

Since the WQBELs enacted in the 2010 revisions to ch. NR 217, Wis. Adm. Code, are potentially much more stringent than TBEL that have been in effect since 1993, there is some flexibility in how the WQBEL is achieved. WPDES permittees may be eligible for two approaches that blend point source and nonpoint source phosphorus control for overall water quality benefits. These approaches (water quality trading and the watershed adaptive management option, discussed in greater detail in chapter 5 of this strategy) allow WPDES permittees to meet their obligations by working with other WPDES permittees or nonpoint sources to reduce phosphorus in waterways.

Nitrogen

Historically, since phosphorus is the key nutrient of concern causing eutrophication in freshwater systems in the Midwest, the requirements for monitoring and controlling nitrogen in surface water discharges has been limited mainly to ammonia due to its toxicity to fish and aquatic life. Monitoring and discharge limits for ammonia have been included in WPDES permits since the 1980s. Generally total nitrogen discharge limits have not been included in WPDES permits.

Since 2008, DNR has required a single analysis of nitrate/nitrite and total Kjeldahl nitrogen for all facilities with their permit applications. Recently, Wisconsin implemented additional monitoring and reporting actions for WPDES permittees in the Mississippi River Basin consistent with the Gulf Hypoxia Task Force Action Plan. The following actions are currently taking place or being phased in as permits are renewed:

- Include total nitrogen (ammonia nitrogen, organic nitrogen, and nitrate/nitrite) quarterly monitoring for major municipalities (greater than 1 MGD) discharging to the Mississippi River Basin.
- Require quarterly total nitrogen permit monitoring for facilities whose permit application shows levels of total nitrogen greater than 40 mg/L.
- Include total nitrogen monitoring in reissued permits for larger cheese plants.
- Monitor meat processors for total nitrogen.
- Continue to require a single analysis of total nitrogen for all facilities with the permit application.
- Since data from paper mills indicate low levels of total nitrogen discharged, no additional permit related monitoring of these discharges is warranted.
- Evaluate future data to determine whether a seasonal variability exists.
- Ensure that the DNR wastewater database tracks which facilities have biological phosphorus removal to enable a future evaluation on the relationship between biological phosphorus and total nitrogen removal.

Wisconsin regulates total nitrogen in groundwater discharges consistent with the 1984 enactment of Wisconsin's groundwater law, Chapter 160, Wisconsin Statutes. For wastewater facilities that discharge treated effluent to groundwater, it is assumed that all forms of nitrogen discharged eventually convert naturally to nitrate, for which there is a health-based drinking water standard of

10 mg/L. DNR limits total nitrogen to 10 mg/L and requires data collection for facilities that discharge to groundwater.

3.2.2 CAFO permits

Phosphorus contributions and to some degree nitrogen contributions from Concentrated Animal Feeding Operations (CAFOs) are controlled by WPDES permits. A Wisconsin livestock operation with 1,000 animal units or more is a Large CAFO. Large CAFOs must have a WPDES permit to operate. These water quality protection permits ensure farms use proper planning, nutrient management, structures, and systems to protect Wisconsin waters. Wisconsin's CAFO permit requirements are in Chapter NR 243, Wis. Adm. Code. DNR may designate a smaller-scale animal feeding operation (fewer than 1,000 animal units) as a CAFO if it has pollutant discharges to navigable waters or contaminates a well.

Under ch. NR 243, Wis. Adm. Code, WPDES permitted CAFOs have the following requirements (not exhaustive):

- Operators must complete the Animal Units Calculation Worksheet so they can determine if they are a CAFO and need to apply for the WPDES permit.
- Operators must complete the WPDES preliminary and final permit applications. If an operation plans to become a CAFO it must submit a preliminary permit application 12 months prior to reaching CAFO size and a final detailed application six months prior to reaching CAFO size.
- WPDES permitted CAFOs must construct manure and process wastewater storage and handling systems in accordance with accepted design standards. There is a zero discharge standard for feedlot and feed storage runoff.
- CAFOs must properly dispose of animal carcasses and develop an emergency response plan for addressing catastrophic spills.
- Farms must develop and implement a nutrient management plan for when, where and how much manure and process wastewater they will apply on cropped fields.
- Manure spread on land must be set back from drinking water wells, sinkholes and fractured bedrock. Additional restrictions apply to manure and process wastewater spread on shallow soils over fractured bedrock.
- Operators may not spread liquid manure on frozen or snow-covered ground unless it's injected or immediately incorporated into soil or there is an emergency outside the operation's control.
- Operators may not spread solid manure on frozen or snow-covered ground during February and March unless immediately incorporated. Farmers can stack solid manure in fields or store it in a designed structure during February and March.
- Six months of liquid manure storage is required with some exceptions.
- There are also inspection, monitoring and reporting requirements, which are included in the Wisconsin CAFO Compliance Calendar.

In addition to the WPDES permit requirements of ch. NR 243, Wis. Adm. Code, CAFOs must also meet Wisconsin's agricultural performance standards and prohibitions, as detailed in ch. NR 151, Wis. Adm. Code. These standards and prohibitions must be met by all agricultural operations, not

just permitted operations. More discussion of these performance standards and prohibitions can be found in Chapter 4 of this strategy.

3.2.3 Municipal Storm Water Discharge Permits

Approximately 220 municipalities in Wisconsin are currently required to have a Municipal Separate Storm Sewer System (MS4) permit. A MS4 permit is required for a municipality that meets one of the following criteria:

- It is located within a federally-designated Urbanized Area,
- Its population equals 10,000 or more based on the latest decennial census; or
- DNR designates the municipality for permit coverage in accordance with s. NR 216.025, Wis. Adm. Code. The MS4 permits are effective for a period of up to five years, at which point the permits are updated and re-issued.

The MS4 permits require municipalities to reduce polluted storm water runoff by implementing storm water management programs with best management practices. The MS4 permits do not contain numerical effluent limits like other WPDES permits. Municipal storm water management programs cover a wide array of activities that occur within a municipality. The permits contain the following required elements:

- **Public Education and Outreach:** The MS4 permit specifies that public education and outreach programs be developed to encourage the public and businesses to modify their behaviors and procedures to reduce storm water pollution.
- **Public Involvement and Participation:** In addition to public education and outreach, the MS4 permit requires municipalities to encourage participation from individuals to prevent storm water pollution. Some examples of public involvement are volunteer stream monitoring, storm drain stenciling, presenting information to established community groups, or planting a community rain garden.
- **Illicit Discharge Detection and Elimination:** Storm sewers that carry rain water runoff are not intended for other fluids and waste material. These pollutants are illicit discharges and may have the potential to harm people, animals and aquatic life in the downstream rivers, lakes and wetlands. Municipalities are required to develop programs to identify, prevent, and eliminate illicit discharges to their storm sewer systems. The DNR has developed additional illicit discharge detection and elimination guidance to assist municipalities with this requirement.
- **Construction Site Pollutant Control:** Municipalities are required to develop a soil erosion control ordinance and enforce it on construction sites. Municipalities may use state-recommended technical standards for methods and products used to control erosion and prevent sediment-laden water from discharging into a lake, stream or wetland.
- **Post-Construction Storm water Management:** Municipalities are required to develop a post-construction ordinance and enforce it to ensure that areas of new and redevelopment will include structural measures to control pollutants, control peak flow, maintain infiltration, and establish vegetated protective areas adjacent to waterways and wetlands. Municipalities may use state-recommended technical standards for post-construction storm water management practices.

- **Pollution Prevention Practices for the Municipality:** MS4 storm water programs are to include practices to prevent pollutants from municipally-owned transportation infrastructure, maintenance areas, storage yards, sand and salt storage areas, and waste transfer stations entering the storm sewer system.
- **Developed Urbanized Area Standard:** Municipalities are required to control the Total Suspended Solids (TSS) carried in storm water from existing urban areas as compared to no controls. Many municipalities have already achieved the state standard of 20% TSS. Compliance with the standard is achieved by implementing a system of practices and activities, which has been verified by a storm water computer model.
- **Storm Sewer System Maps:** Municipalities covered by a MS4 permit area are required to maintain a map of the storm sewer system. These maps identify storm sewer conveyances such as pipes and ditches, and also identify roads, streams and lakes.
- **Impaired Waters:** Many streams and lakes in Wisconsin are polluted or impaired to a point that animal and plant communities in the receiving waters are significantly impacted. If the storm sewer system discharges a pollutant of concern to an impaired water, a municipality covered by a MS4 permit is required to develop a plan to reduce those pollutants.

3.3 Future Directions

Wisconsin partners will continue to work with regulated entities to manage nutrients through traditional permits and innovative approaches such as pollutant trading and the Watershed Adaptive Management Option discussed in Chapter 5 of this strategy.