

## ADMINISTRATIVE RULES Fiscal Estimate & Economic Impact Analysis

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1. Type of Estimate and Analysis

Original  Updated  Corrected

Date: 07/18/2019

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2. Administrative Rule Chapter, Title and Number

NR 102 – Water Quality Standards for Wisconsin Surface Waters

NR 104 – Uses and Designated Standards

NR 210 – Sewage Treatment Works

Clearinghouse Rule # 19-014

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3. Subject

WY-17-15: Updating Wisconsin’s water quality criteria for pathogens (bacteria) and recreational uses and related WPDES permit implementation procedures for the revised water quality standards to be consistent with EPA’s recreational water quality criteria.

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4. Fund Sources Affected

GPR  FED  PRO  PRS  SEG  SEG-S

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5. Chapter 20, Stats. Appropriations Affected

20.370 (4)(ma)

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6. Fiscal Effect of Implementing the Rule

No Fiscal Effect  Increase Existing Revenues  Increase Costs  
 Indeterminate  Decrease Existing Revenues  Could Absorb Within Agency's Budget  
 Decrease Cost

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7. The Rule Will Impact the Following (Check All That Apply)

State's Economy  Specific Businesses/Sectors  
 Local Government Units  Public Utility Rate Payers  
 Small Businesses (if checked, complete Attachment A)

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8. Would Implementation and Compliance Costs Be Greater Than \$20 million?

Yes  No

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9. Policy Problem Addressed by the Rule

Revisions to Wisconsin’s water quality criteria for bacteria to protect recreation, and related implementation procedures, are necessary for several reasons.

- Wisconsin’s current criteria are outdated and not adequately protective. Wisconsin uses fecal coliform bacteria as the pathogen indicator while the United States Environmental Protection Agency (EPA) has recommended using *E. coli* as a pathogen indicator since the mid-1980s. These revisions ensure that Wisconsin’s criteria are based on the latest scientific knowledge and adequately protect people that are recreating in Wisconsin’s waters.
- States with coastal waters are required by the Beaches Environmental Assessment and Coastal Health (BEACH) Act to adopt EPA’s latest water quality criteria for pathogens (including bacteria) no later than 3 years after publication. If these criteria are not adopted in a timely manner, EPA has the authority to promulgate water quality standards to ensure the requirements of the Clean Water Act are met. EPA published their latest recommendations in 2012.
- Revising the bacteria criteria at this time will also allow Wisconsin to continue to receive federal grants for beach monitoring and notification. To be eligible for these grants, the state’s water quality program must be consistent with the performance criteria established by the EPA. In 2014, the EPA added adoption of new or revised recreational water quality standards as a performance criterion. These funds are crucial for supporting Wisconsin’s beaches as the department distributes them to local communities to monitor their beaches, notify community members in a timely manner when issues arise, and collect information necessary to restore problem beaches.
- Wisconsin’s current bacteria criteria are applied inconsistently throughout the state. Wisconsin has different standards for inland and Great Lakes waters because EPA over-promulgated criteria for the Great Lakes in 2004. This has resulted in an additional burden on permittees to the Great Lakes as they are required to monitor for both fecal coliform and *E. coli*. This rule revision would apply the same criteria statewide during the disinfection period for recreation to reduce duplicative monitoring.

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10. Summary of the businesses, business sectors, associations representing business, local governmental units, and individuals that may be affected by the proposed rule that were contacted for comments.

Facilities that may be affected and other interested parties were contacted and given the opportunity to comment on the draft EIA during the public solicitation period.

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11. Identify the local governmental units that participated in the development of this EIA.

Local governments and their treatment facility operators were given the opportunity to comment on the draft EIA during the public solicitation period. Comments were submitted by Milwaukee Metropolitan Sewerage District, City of Chilton Wastewater Treatment Plant, Watertown Wastewater Treatment Plant, Plymouth Utilities, Madison Metropolitan Sewerage District, Polk County Health Department, City of Racine Public Health Department, and the Municipal Environmental Group representing municipal treatment plants and including a study from Racine Wastewater Utility. WDNR prepared responses to all comments and revised portions of the EIA and the rule language accordingly.

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12. Summary of Rule's Economic and Fiscal Impact on Specific Businesses, Business Sectors, Public Utility Rate Payers, Local Governmental Units and the State's Economy as a Whole (Include Implementation and Compliance Costs Expected to be Incurred)

This rule is expected to have a moderate economic impact estimated at an annual cost of approximately \$2.1 million (rounded to two significant figures). The costs incurred will be due to increased disinfection needed for some facilities to comply with *E. coli* permit limits, and changes in analytical methods associated with monitoring each type of bacteria. These changes solely pertain to facilities subject to ch. NR 210, Wis. Adm. Code (i.e., publicly owned treatment works, privately owned domestic sewage treatment works). Of 354 total facilities that disinfect, over half (208) are expected to already meet permit limits based on *E. coli* with no additional treatment. The department estimates that 41% (146) will need to increase treatment, with a total annual cost of increased treatment for all facilities combined of \$2,100,000. The department anticipates the total annual cost of sample analysis for facilities that monitor to be \$53,000. Cost savings for 20 facilities that will be able to reduce monitoring are estimated at \$22,000. Taken together, the net annual cost of compliance is anticipated to be \$2,100,000. Throughout this analysis, costs are rounded to two significant figures; therefore the total cost in some tables may not be equal to the sum of all individual costs.

### **Impact of increased treatment**

The proposed change in criteria and limits may require some facilities to increase their level of disinfection. Facility-specific costs for meeting the limit were estimated using facility-specific data and summed to estimate a state-wide compliance cost of the rule. Impacts due to increased treatment were assessed for a total of 354 facilities that utilize either chlorine or ultraviolet (UV) disinfection. Costs of meeting bacteria limitations were only assessed for facilities that treat domestic wastewater and are currently subject to bacteria limitations.

Fifty eight percent of facilities (208) are expected to be able to meet the proposed limits (monthly *E. coli* geomean of 126 counts/100 mL and STV of 410 counts/100 mL) at their current disinfection level, and no costs of increased treatment were attributed for these facilities. Approximately 41% of the total facilities in the state (66 facilities using chlorine disinfection; 80 facilities using ultraviolet disinfection) are expected to require additional treatment to meet the proposed change in criteria and limits.

Using a first-order kinetics model, a multiplier representing an increased level of ultraviolet or chlorine disinfection needed beyond the current treatment level was computed for each facility. The cost estimates developed in this analysis included capital costs and operation and management costs. Capital costs were amortized over 20 years using a nominal discount rate of 3.6%.

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- Based on the model developed, incremental flow-rated chlorine disinfection cost was estimated to be \$220 (\$/MGD/d/100% additional disinfection) with 4mg/L of chlorine as the baseline dose.
- The incremental flow-rated ultraviolet disinfection cost was estimated to be \$72 (\$/MGD/d/100% additional disinfection) with an operational transmissivity of 0.8.

The annual total cost of an increase in disinfection as a result of this rule is estimated at \$2,100,000 per year (Table 1).

Table 1. Estimated cost increases due to increased disinfection.

	Facilities expected to need additional treatment	Total Annual Cost (amortized over 20 years)
Chlorine	66	\$1,800,000
UV	80	\$340,000
Total	146	\$2,100,000

### Impact of sample analysis

Facilities may also experience an increased cost for lab analysis of *E. coli* samples instead of fecal coliform samples. The department estimated costs for facilities currently monitoring for fecal coliform that will be required to switch to monitoring for *E. coli* during the disinfection period for recreation protection. Facilities may also incur increased costs associated with purchasing equipment to analyze *E. coli* samples using a multiple well method if they choose to use that analytical technique. To estimate lab analysis costs associated with this rule, the department looked both at costs for facilities to send samples to an external certified lab for analysis, and at an alternative of conducting analysis in-house if the facility has a certified lab.

The department obtained quotes from several commercial labs in the state for both fecal coliform and *E. coli* monitoring (per sample, *E. coli*: \$25; fecal coliform: \$19). This information, along with monitoring requirements in current permits, was used to estimate facilities' current cost of monitoring. Projected costs were then calculated assuming facilities will monitor for only *E. coli* at their current monitoring frequency from May 1 through September 30 (or other currently designated recreation period) and send samples to an external lab for analysis (Table 2). The analyses in this section do not assess monitoring costs during other parts of the year since this rule does not affect monitoring outside the recreation disinfection season.

Table 2. Estimated costs due to changes in analytical methods: Using external lab

Proposed Change	Number of Facilities	Estimated Annual Change per Facility (\$)	Total Annual Costs (\$)
Switch indicator from fecal coliform to <i>E. coli</i> ; External lab analysis	336	160	<b>53,000</b>

Facilities with a certified lab in-house can determine whether it is more cost-effective for them to send their samples to an external lab or do the analysis in-house. If doing in-house analysis, facilities may use membrane filtration methods or multiple well methods. Most facilities are already doing membrane filtration for fecal coliform. If they continue with membrane filtration for *E. coli*, cost per sample would be generally equivalent. Some facilities may wish to instead purchase equipment to convert to multiple well analysis, which can save staff time and may be more efficient in the long-term. The department obtained cost estimates from a multiple well test manufacturer (IDEXX) for up-front capital costs as well as ongoing annual costs for facilities that choose to begin analyzing *E. coli* using a multiple well method rather than a membrane filtration method (Table 2). Costs shown in Table 3 are optional and would be in place of costs from Table 2 for facilities selecting this option.

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Table 3. Estimated costs due to changes in analytical methods: In-house lab analysis with multiple well methods

Proposed Change	Number of Facilities	Estimated Annual Change per Facility (\$)	Total Annual Costs over 10 years (\$)
Switch indicator from fecal coliform to <i>E. coli</i> ; Purchase defined substrate analytical equipment (optional)	102*	First year** 5000 Subsequent years** 140***	<b>51,000</b> <b>14,000</b>

\* assumes only 50% of facilities that have a laboratory certification may prefer this approach

\*\* first year costs represent purchase of basic equipment; subsequent year costs represent UV bulb replacement

\*\*\* Ongoing costs may be lower if a facility chooses not to do multiple well analysis outside of the recreation disinfection period.

For some facilities, changes to the monitoring requirements will reduce costs. There are 20 municipal wastewater treatment facilities that are monitoring for both fecal coliform and *E. coli* during the recreation season. These facilities may see an economic benefit from this rule as they will no longer have to monitor for fecal coliform during the recreation season (Table 4). Each of these 20 facilities is estimated to save \$1,100 annually, for a total of \$22,000 combined annual savings.

Table 4. Estimated savings due to changes in monitoring requirements

Proposed Change	Number of Facilities	Estimated Annual Change per Facility (\$)	Total Annual Savings (\$)
Drop fecal coliform indicator; continue monitoring <i>E. coli</i>	20	-1,100	<b>-22,000</b>

Note: This analysis only calculates costs and savings during the time period for disinfection to protect recreation.

Facilities that disinfect/monitor year-round and currently monitor for both indicators may be able to drop analysis for either fecal coliform or *E. coli* during the non-recreation part of the year as well, which could further increase savings.

### 13. Benefits of Implementing the Rule and Alternative(s) to Implementing the Rule

Revisions to the water quality criteria and effluent limits are likely to lead to improved water quality and reduced risk of illness in people recreating in Wisconsin's waters. While these benefits are hard to quantify, they are expected to result in an overall benefit to the citizens of Wisconsin.

While the alternative is to not revise the bacteria criteria and maintain the status quo, there are several disadvantages to that approach. First, the state would continue to use fecal coliform an indicator for recreation, which has been shown to be ineffectual for recreational protection. This would also perpetuate current inconsistencies in the permit limits required during the disinfection period for recreation at facilities in various parts of the state. Second, if the state's criteria are not revised the department may lose federal grant dollars that are passed through to local communities. Third, EPA could promulgate the revised criterion for Wisconsin as they did in 2004. If EPA does promulgate criteria for Wisconsin, its rule-making process is unlikely to include revisions to related rules (such as discharge permit requirements) and would not eliminate the state's published fecal coliform criteria that currently apply during the recreation time frame. Additionally, if EPA promulgates criteria, Wisconsin would lose the ability to select its own pathogen indicator and acceptable risk level and to develop site specific criterion procedures.

### 14. Long Range Implications of Implementing the Rule

The revision from fecal coliform to *E. coli* as the state's pathogen indicator for recreation protection will make the state consistent with EPA regulations. It will better protect public health and recreational opportunities by keeping bacterial levels in waterways low. Once a facility has come into compliance with their water quality based effluent limits, they

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must stay in compliance. Therefore, costs for disinfection and monitoring will be recurring annual costs as estimated in this analysis.

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### 15. Compare With Approaches Being Used by Federal Government

Section 303(i)(1)(B) of the Clean Water Act requires states with coastal waters (including the Great Lakes) to promulgate criteria for pathogens/pathogen indicators (including bacteria) and submit these criteria to EPA for approval.

Section 303(c) of the Clean Water Act requires states to periodically review and modify or adopt, if necessary, water quality standards. This requirement applies to all surface waters in the state.

Federal regulations (40 CFR 131.10 and 11) require states to develop water quality standards comprised of designated uses and criteria to protect the uses. 40 CFR 131.10(j) requires states to conduct a use attainability analysis to remove or modify the designated uses specified in Section 101(a)(2) of the Clean Water Act, which include recreation. 40 CFR 131.11(b) states that the criteria must be based on federal guidance, federal guidance modified to reflect site-specific conditions, or other scientifically-defensible methods.

Section 301(b)(1)(C) of the Clean Water Act requires compliance with effluent limits needed to meet water quality standards.

40 CFR 122.44(d) requires that water quality based effluent limits be established when discharge levels have the potential to cause or contribute to an exceedance of a water quality standard.

40 CFR 122.45(d) requires that effluent limits be expressed as average weekly and average monthly values for publicly owned treatment works (POTWs) with continuous discharges.

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### 16. Compare With Approaches Being Used by Neighboring States (Illinois, Iowa, Michigan and Minnesota)

In this rule package, the department has selected an approach that is consistent with neighboring states, selecting *E. coli* as the pathogen indicator for recreation protection. All neighboring coastal states (Michigan, Minnesota, Indiana, Ohio) except Illinois currently use *E. coli* as the pathogen indicator. Illinois is currently in the process of revising their criteria to use *E. coli*. Iowa is not a coastal state and is therefore not subject to the same BEACH Act regulations, but also uses *E. coli* as its indicator. The states vary in certain specifics associated with the criteria and permit implementation, since some states' criteria and implementation procedures are based on older EPA recommendations or they have selected different illness rates, etc. The department is generally consistent with the other states in approach but follows the most recent federal recommendations, similar to Ohio.

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<b>17. Contact Name</b>	<b>18. Contact Phone Number</b>
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This document can be made available in alternate formats to individuals with disabilities upon request.

## ATTACHMENT A

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### 1. Summary of Rule's Economic and Fiscal Impact on Small Businesses (Separately for each Small Business Sector, Include Implementation and Compliance Costs Expected to be Incurred)

Privately owned sewage treatment facilities that currently disinfect wastewater are likely to be affected by this rule. There are currently five such facilities that may be affected small businesses, such as mobile home parks or nursing homes. Some facilities may need to increase disinfection to comply with *E. coli* permit limits and/or change lab analysis procedures. The total annual compliance cost for these facilities combined is estimated at \$2,200. This includes an estimated cost of \$1,500 for increasing disinfection, and a cost of \$660 for switching analytical methods from fecal coliform to *E. coli* during the recreation period.

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2. Summary of the data sources used to measure the Rule's impact on Small Businesses

Privately owned sewage treatment works that are currently disinfecting were identified through the department's permit program data system (System for Wastewater Applications, Monitoring and Permits, or SWAMP). A subset of five facilities identified may be small businesses, although WDNR does not have data that specifies this. The difference between current and projected monitoring costs for these facilities was calculated in the same way as described for publicly owned sewage treatment facilities.

3. Did the agency consider the following methods to reduce the impact of the Rule on Small Businesses?

- Less Stringent Compliance or Reporting Requirements
- Less Stringent Schedules or Deadlines for Compliance or Reporting
- Consolidation or Simplification of Reporting Requirements
- Establishment of performance standards in lieu of Design or Operational Standards
- Exemption of Small Businesses from some or all requirements
- Other, describe: See item 4 below.

4. Describe the methods incorporated into the Rule that will reduce its impact on Small Businesses

Two revisions were made to the originally proposed rule language that will reduce its effect on small businesses: (a) the monitoring frequency was kept at each facility's existing frequency instead of requiring a minimum of twice weekly; and (b) both types of permit limits are now set at a calendar month basis, which is the simplest approach. These adjustments reduce the fiscal burden for small businesses and make implementation easier.

5. Describe the Rule's Enforcement Provisions

Enforcement provisions are not included in the portions of the rule affected by the proposed order. These provisions are located in other portions of administrative rule not proposed for revision in this proposed rule order.

6. Did the Agency prepare a Cost Benefit Analysis (if Yes, attach to form)

- Yes (see summary table below)  No

Five privately owned facilities currently subject to bacteria limits were identified that may be impacted by the rule. The potential small businesses identified here are a subset of the above group of all facilities; therefore these costs are not in addition to the costs above. The number of actual small businesses may be fewer than five, in which case total costs would be lower.

Table 5. Number of Small Business Facilities Assessed

	Chlorine Disinfection	Ultraviolet (UV) Disinfection
Total Number of Facilities	3	2
Facilities anticipated to meet EC limits with current treatment	0	1
Facilities expected to need additional treatment to meet EC limits	3	1

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Table 6. Estimated costs for affected small businesses.

	<b>Number of Facilities</b>	<b>Total Annual Cost** (amortized over 20 years)</b>
Total cost of increased disinfection	4	\$1,500
Facilities using chlorine	3	\$1,500
Facilities using UV	1	\$39
Sample analysis*	5	\$660
<b>Total for increased disinfection &amp; analysis for all facilities combined</b>	<b>5</b>	<b>\$2,200</b>

\* Assumes facilities send samples to an external lab for analysis.

\*\* Table shows two significant figures.