

## ADMINISTRATIVE RULES Fiscal Estimate & Economic Impact Analysis

1. Type of Estimate and Analysis

Date: 06/12/19

Original  Updated  Corrected

2. Administrative Rule Chapter, Title and Number

NR 102, Water quality standards for Wisconsin surface waters; WY-23-13

3. Subject

Processes for waterbody assessments and impaired waters listing, biological criteria for water quality standards, and biological confirmation of phosphorus impairments

4. Fund Sources Affected

GPR  FED  PRO  PRS  SEG  SEG-S

5. Chapter 20, Stats. Appropriations Affected

APPR 401/411

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

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)

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

Yes  No

9. Policy Problem Addressed by the Rule

This rule package addresses several areas related to the state's assessments of its streams, rivers, lakes and other waterbodies. It focuses largely on assessments related to the biological quality of a waterbody.

*Waterbody Assessments and Reporting.* Every two years, under federal Clean Water Act requirements, the department assesses the state's waterbodies to determine whether they are attaining water quality standards. A new subchapter is proposed that codifies Wisconsin's current procedures for conducting surface water impairment assessments, including public participation opportunities and EPA approval.

*Biocriteria.* The most direct and commonly-applied method of measuring the quality of a waterbody is through assessing the biological communities within the waterbody—its fish, insects, plants, and algae. This proposed subchapter establishing narrative biocriteria will provide a general outline of the types of procedures that the department undertakes to assess the quality of surface waters based on the health of their biological communities. These "narrative biocriteria" generally describe the types of biological assessments conducted to determine whether a waterbody's aquatic community is healthy and attaining its designated uses or is not attaining and should be placed on the impaired waters list (s. 303(d) list).

*Dissolved oxygen criteria for Aquatic Life.* Revisions to the dissolved oxygen section are needed to clarify which criteria apply to different waterbody types:

- This rule specifies that the dissolved oxygen criterion of 7.0 mg/L applies not only to the time of spawning but also during the early life stages that require higher oxygen levels. This more protective time frame applies to only trout class I and II streams, which by definition support trout reproduction. This rule removes the requirement for higher dissolved oxygen during spawning from class III trout streams, which by definition do not support reproduction.
- This rule relocates certain dissolved oxygen criteria from ch. NR 104 to s. NR 102.04(4), so that all dissolved oxygen criteria are located in the same part of the code. The relocated criteria are the existing dissolved oxygen criterion of 3 mg/L for limited forage fish waters and 1 mg/L for limited aquatic life waters, diffuse surface waters,

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and wastewater effluent channels. It also establishes which dissolved oxygen criteria apply to waters for which a use attainability analysis, a federally authorized process, documents that the otherwise applicable aquatic life use cannot be met.

- The addition of oxythermal criteria for two-story fisheries is necessary because the existing dissolved oxygen criteria are not appropriate for this relatively rare and sensitive type of coldwater fishery, comprising only .01% of Wisconsin's lakes.

*Algae criteria for Recreation and Aquatic Life.* The rule proposes algae (chlorophyll *a*) criteria for lakes, reservoirs and impounded flowing waters. Algae levels are a top water quality concern for the public, and are a critical component of waterbody assessments to determine whether recreational goals are met. The chlorophyll *a* criteria created here are the same as those already used by the department to assess water quality for recreation and aquatic life uses.

*Phosphorus assessment procedures using biological metrics.* Statewide phosphorus criteria were promulgated in 2010. However, the criteria did not include evaluation procedures for determining attainment of the phosphorus criteria in a waterbody. This rule specifies how attainment of the phosphorus criteria is determined. It also incorporates flexibility for determining impairment due to phosphorus levels by creating a "combined criteria" approach. Under this approach, the waterbody's phosphorus concentration is reviewed in conjunction with "phosphorus response indicators"—algae and plant metrics—that specifically indicate whether the waterbody is exhibiting a biological response to phosphorus. If a waterbody exceeds the statewide phosphorus criterion (within a certain range) but does not exhibit a biological or recreational use impairment, it would not be considered impaired for purposes of s. 303(d) listing.

*NR 217 calculation of upstream background phosphorus concentrations.* This rule includes a revision to a portion of ch. NR 217 to align the phosphorus calculation methods used to determine background phosphorus concentrations for effluent limit calculations with those delineated in proposed s. NR 102.07 (1) (a) 2. Previously, slightly different methods were used to calculate ambient phosphorus concentrations for purposes of criteria assessment and to calculate upstream background phosphorus concentrations for WPDES permit limit derivation under s. NR 217.13 (2) (d). Although these two methods yield very similar resulting phosphorus concentrations, the differences between the two methods have caused confusion and are unnecessary. The proposed procedure detailed in s. NR 102.07 (1) (a) 2, which is the method used for criteria assessment, parallels how the criteria were initially developed and will be most appropriate for both applications.

*Definitions.* Several new definitions are included in this rule, and some definitions are relocated from the section of the rule dealing only with the phosphorus criteria to the section of the rule applying to the whole chapter. There are also some clarifications made to a few definitions, such as "stratified lake or reservoir" and "stratified two-story fishery lake." These are not expected to change the waterbodies included in these categories, only to clarify the existing interpretation of these terms.

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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.

This rule may affect lake or watershed associations or citizens interested in water quality assessments, environmental organizations, and businesses or municipalities discharging wastewater to surface waters. An external advisory committee worked with the department on development of this rule. Advisory committee members included a variety of business sectors that require WPDES permits for wastewater discharge, organizations representing municipal wastewater treatment facilities, and environmental organizations. The department emailed a draft of this fiscal estimate and economic impact analysis (EIA) to over 5,700 parties, including all permitted surface water dischargers and parties that have indicated an interest in water quality standards. The comment period was from April 16, 2019 through May 16, 2019. The department prepared responses to all comments and revised portions of the EIA accordingly.

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

The Department provided an opportunity for local governmental units to provide information to the Department for consideration in the EIA. Two entities representing municipal wastewater dischargers submitted comments during the EIA solicitation period: The City of Brookfield and Municipal Environmental Group. Several entities representing municipal wastewater dischargers participated as standing members of the department's External Advisory Committee during development of this rule: Municipal Environmental Group, Central States Water Environment Association-WI Section, WI Rural Water Association, and Milwaukee Metropolitan Sewerage District.

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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 primarily pertains to biological assessments of surface waters. The department expects this rule package to have minimal economic impacts (less than \$50,000), for two main reasons:

1. This rule largely documents protocols and procedures already used by the department for standard assessments. These types of assessments are common amongst states. Because it largely reflects the status-quo, additional costs are not anticipated.
2. Biological metrics do not typically have direct impacts on the regulated community. Rather, they help the department determine what types of stressors may be affecting biological communities, and whether restoration actions may be needed to mitigate those stressors. In the rare case where the biological community is impaired due to a pollutant that is present at low enough levels that the pollutant is not exceeding its criterion, the department would need to go through the process of developing a more stringent site-specific criterion for that pollutant before permit limits might be affected. In other states applying biological criteria, it is very rare that the biological criteria have any effect upon a permit limit.

*Waterbody Assessments and Reporting.* This proposed subchapter provides a general outline of the types of waterbody assessments currently being used by the department as required under the Clean Water Act. As such, there is no economic impact expected from the creation of this subchapter.

*Biocriteria.* This proposed subchapter establishes narrative biocriteria that describe the biological quality goals for a surface water's aquatic life community, and provides a general outline of the procedures currently being used by the department to assess biological quality. As such, there is no economic impact expected from the creation of this subchapter. The department's guidance for assessing waterbodies, Wisconsin Consolidated Assessment and Listing Guidance or WisCALM, includes recommended methods for biological assessments. WisCALM would continue to be updated every two years with each assessment cycle, and any such updates to the guidance are subject to a separate public comment period. As WisCALM is updated over time, existing biological metrics such as those for fish and aquatic insects may be revised to reflect the most recent science. If any new biological metrics are included in WisCALM in the future – for instance, a lake aquatic plant metric that is under consideration – waterbodies would then be assessed for attainment of the new biological metric as well. A waterbody that is determined to be biologically impaired and for which a pollutant is identified as the cause of impairment may be subject to future pollutant reduction measures that could entail a cost. However, permitted dischargers would only be fiscally impacted if an SSC more stringent than the pollutant's statewide criterion was developed and approved by USEPA. Development of such SSC are already allowable under existing authority.

As part of the economic analysis comment period, more information was requested about how the economic impact and number of impaired waters might change based on whether biological assessments were not a part of the department's assessment protocols, whether it was in guidance (status quo), in narrative biocriteria, or in numeric biocriteria.

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- (a) If the department had **never assessed the health of biological communities** in Wisconsin's waters, there would be zero impairments listed for fish or aquatic insects on the Section 303(d) impaired waters list. There would presumably be zero cost for the regulated public associated with that scenario. However, it would entail a major step backwards for understanding the health of Wisconsin's aquatic communities and documentation of which waterbodies may need restoration, and the state could lose funding under federal regulations. Federal regulations and the Clean Water Act require water quality assessments and biological evaluations of waterbodies (see 40 CFR ss. 130.4 and 130.8). The health of biological communities is critical in determining whether aquatic life uses are being met.
- (b) Under the **status quo**, DNR assesses biological communities **using recommended protocols in its WisCALM guidance**. Currently, these include metrics for fish and aquatic insects. If these are not attained, a waterbody is listed for "degraded biological community". Often there is no pollutant associated with this listing, and biological impairments are not directly addressed through permit limits. Biological metrics are developed to assess overall community health, and these communities can be sensitive to a wide range of stressors outside of specific pollutants, such as habitat loss, invasive species, and dams. Biological listings are not linked to specific pollutants unless a demonstration has been made that a pollutant is causing the degradation. To date, the department is not aware of any economic impacts of these listings.
- *Impairment listings:* As of the 2018 list, there are currently 228 river or stream segments listed for degraded biological community (lakes are not currently assessed for biological metrics). This is 13% of rivers/streams that have been assessed for biology.
  - *Metric updates:* The biotic metrics in guidance may be adjusted over time to reflect the most recent science, and a public comment period is held whenever updates are made.
- (c) Under **narrative biocriteria**, as proposed in this rule package, DNR would continue to conduct assessments under the WisCALM guidance as in (b) above. As demonstrated by several years of listings for biological metrics, we do not expect an economic impact from these listings, even should the thresholds be adjusted in the future. In the rare case that a pollutant discharged by a facility is clearly and demonstrably impacting the community, an SSC for that pollutant may be done, and permit limits may be adjusted accordingly, as is appropriate if the biological community is being degraded by a discharge.
- Because DNR is currently in the process of reviewing and revising the existing metrics for fish and aquatic insects, we do expect that the biological metrics in WisCALM will be updated for the 2022 assessment cycle. We also expect to add an aquatic plant assessment tool for lakes to WisCALM, which is greatly needed because lakes currently do not have any biological assessment tools. These updates would be vetted first through the WisCALM public comment period.
  - Until the tool revisions are complete, we do not yet know the number of waters that would be listed as impaired for fish or insects, but this information will be made available at that time. On the addition of the plant assessments for lakes, we currently have 656 lakes with plant surveys. Of these, 468 lakes (71%) attain the plant assessment tool, and 188 lakes (29%) do not attain and would be listed as impaired. Many of these would not be lakes listed as impaired for the first time, as they are already on the list as impaired for other metrics. Similar to fish or insect metrics, this plant tool is designed to reflect a broad range of stressors, such as shoreline disturbance and invasive species. Lakes with poor plant communities would typically be addressed through voluntary shoreline and lake management rather than through permit adjustments. We therefore do not expect that these biological assessments will result in economic impacts to the regulated community.
- (d) If **numeric criteria** are promulgated in the future, then specific thresholds for various biological communities would be established. The thresholds for the existing fish and insect assessments may be adjusted as needed, and assessments for plant communities may be added, as discussed in (c). As with narrative biocriteria, we do not expect these biological assessments will result in economic impacts to the regulated community.

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*Dissolved oxygen criteria for Aquatic Life.* Revisions to the dissolved oxygen section are minimal and help clarify which criteria apply to different waterbody types. These have no expected economic impact. The addition of oxythermal criteria for two-story fisheries is useful in assessing the health of the fishery but is not expected to have an economic impact, as there are no dischargers with individual Water Pollution Discharge Elimination System (WPDES) permits on or upstream of two-story fishery lakes. If a waterbody is not attaining this criterion, the department may recommend a study to determine the reason for non-attainment and what restoration actions may be appropriate.

*Algae criteria for Recreation and Aquatic Life.* These criteria are the same as algal benchmarks already used by the department to assess water quality and list a waterbody as impaired where recreational uses are adversely affected. A waterbody not attaining its algal metrics but attaining phosphorus criteria would not affect permit limits unless a site-specific phosphorus criterion were approved for the waterbody. Therefore, the department does not expect an additional economic impact based on this change.

The department's analysis indicates that, once attained, the existing statewide phosphorus criteria will be protective of the proposed chlorophyll *a* criteria in most waterbodies. The department does not intend to require chlorophyll *a* monitoring of discharges, and there are no permit implementation procedures associated with the chlorophyll *a* standard required in the rule. A more stringent phosphorus limit would only be derived if an SSC is developed and approved that demonstrates the need for lower phosphorus than the statewide criterion.

For a waterbody in which the phosphorus criterion is attained but the chlorophyll *a* criterion is not attained, the solution is likely to involve addressing phosphorus. However, if this were to occur, the department would first evaluate whether a more stringent site-specific criterion (SSC) for phosphorus is needed to attain the chlorophyll *a* criterion. For any parameter for which the state has a numeric water quality criterion, such as phosphorus, permit limits are set based on attainment of that numeric criterion, not on a separate parameter even though they may be related.

In such a case, if a more protective phosphorus SSC were developed to achieve the chlorophyll *a* criterion and approved by U.S. EPA, then permit limits would be adjusted accordingly. However, development of a more protective phosphorus SSC would have to go through its own rulemaking process or an equivalent public participation process established in rule, and any costs associated with it would be evaluated at that time. In accordance with these points, since the establishment of chlorophyll *a* thresholds in WisCALM guidance in 2012, there have been no cases where a chlorophyll *a* listing has influenced a permit limit, except through Wisconsin River Basin TMDL analysis and related rule proposal for a phosphorus SSC in the Wisconsin River Basin. The Wisconsin River Basin proposed SSC has its own economic analysis.

Although we maintain that there are not likely to be additional economic impacts from the chlorophyll *a* criteria, we have revised a portion of the rule to minimize concerns about effects on permits. We have revised the rule to limit the application of the chlorophyll *a* criterion to lakes, reservoirs, and impounded flowing waters, and removed its application as a criterion for rivers. Rivers should be adequately protected by a combination of the existing phosphorus criterion and the chlorophyll criteria for any impounded areas within it. The chlorophyll *a* threshold would still apply as a phosphorus response indicator for rivers and may be used as a basis for site-specific criteria in rivers without impounded areas. The chlorophyll *a* criteria do not apply to streams.

*Phosphorus assessment procedures using biological metrics.* This section clarifies the protocols currently used by the department to assess attainment of the phosphorus criteria, and adds a component that allows a waterbody's biological response to phosphorus, or lack thereof, to be taken into account before listing it as impaired for phosphorus (a.k.a. the "combined approach"). This will provide the benefit of keeping a small number of waters off the impaired waters list. It would not add additional waters to the impaired waters list. No costs are associated with this portion of the rule.

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*NR 217 calculation of upstream background phosphorus concentrations.* The department does not anticipate an economic impact from this revision. Currently, the two methods yield very similar results and alignment of the calculation methods is not expected to have an impact. For a small number of facilities it is possible that this would change the upstream phosphorus concentration used and the resulting calculated limit, but this minor change would not necessitate different treatment types, and economic impacts are not expected.

*Definitions.* Because the clarifications to definitions are not expected to change the waterbodies included in the categories, only clarify existing interpretation of these terms, no economic impact is expected.

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

This rule has several benefits:

- It improves transparency for the public by documenting and clarifying several standard departmental procedures. These include documentation of general waterbody assessment procedures, use of biological assessments, and calculation procedures for phosphorus criteria.
- It provides new criteria for certain critical parameters. Algal metrics have been identified as the public's number one priority through the department's Triennial Standards Review, and are essential for assessing the recreational condition of our state's waters. Oxythermal criteria fill an important gap by providing criteria that are appropriate for the state's rare two-story (coldwater) fisheries.
- Phosphorus response indicators provide flexibility in determining whether a waterbody's recreation or aquatic life uses are impaired due to phosphorus. This may provide a benefit in keeping certain waters off the impaired waters list.

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

The long-range implications of this rule are the same as the short range implications. This rule package will provide transparency to the public on department procedures for assessing the quality of the state's waterbodies, including biological assessments. It will also provide improved methods for assessing algae, dissolved oxygen, and phosphorus-related metrics. Biological metrics and phosphorus response indicators are also tied to a related rule package that establishes procedures for deriving site-specific criteria for phosphorus. Along with use in standard waterbody assessments, these metrics would serve as a basis for determining the need for site-specific criteria for individual waterbodies.

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

The federal Clean Water Act requires states to develop and update water quality criteria protective of waterbodies' designated uses, and requires states to conduct waterbody assessments based on these criteria every two years. U.S. EPA has been working with states over the last two decades to develop robust biological metrics for use in these assessments, and supports states in implementing these procedures as part of their assessment protocols.

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

- All states follow assessment procedures similar to the department's waterbody assessment procedures outlined in subch. IV of ch. NR 102.
- Biological assessments are used by states to evaluate the biological health of surface waters. Some states assess waterbodies through guidance and other states have established narrative or numeric biocriteria in rules. Narrative biocriteria provide a general statement of goals and the types of metrics to be assessed, while numeric biocriteria specify numeric thresholds for biological quality of fish, insects, plants, or other aquatic life. Wisconsin is proposing narrative biocriteria. Indiana currently has narrative biocriteria. Until recently, Minnesota had narrative biocriteria

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similar to Wisconsin's proposal. Minnesota recently revised their biocriteria to a numeric format. Ohio also has promulgated numeric biocriteria. Michigan, Illinois, and Iowa have not formally incorporated narrative or numeric biocriteria into their water quality standards. However, all Region 5 states, Iowa, and most other states in the nation do use biological metrics such as fish and insect scores for waterbody assessments and 303(d) listing, regardless of whether narrative or numeric biocriteria are codified.

- Most Region 5 states use some variation on phosphorus response indicators, including algal indicators or criteria. Minnesota has a promulgated combined criteria approach to assessing nutrient levels and their biological and chemical responses. Minnesota's biological metrics center on chlorophyll *a*. Ohio's approach is to use a multi-metric scoring system that aggregates results from separate evaluations of primary productivity (algae/plants), biological health and in-stream nutrient concentrations. Indiana has a process for assessing phosphorus impairments using chlorophyll *a* response indicators. Illinois has numeric phosphorus criteria for lakes and is currently considering promulgating proposed numeric phosphorus criteria for streams/rivers. Illinois also has narrative nutrient criteria and considers a water to be not meeting the criteria if excess algae is present in the waterbody. Michigan does not currently have numeric phosphorus criteria, but does have narrative phosphorus criteria. Iowa does not currently have phosphorus criteria but does assess waterbodies for phosphorus and chlorophyll *a*, and uses chlorophyll *a* to list waters as impaired for eutrophication based on narrative criteria.
- Wisconsin and Minnesota are the only Region 5 states that have two-story coldwater fishery lakes. Wisconsin's oxythermal criteria were developed using a modification of methods developed in Minnesota. Although Minnesota uses its methods for assessments, it has not yet codified oxythermal criteria for its two-story fishery lakes.

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