

10-18-2019

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
REPEALING, RENUMBERING, RENUMBERING AND AMENDING, AMENDING, REPEALING
AND RECREATING AND CREATING RULES

The Wisconsin Natural Resources Board adopts an order to **repeal** NR 102.04 (4) (b) and 102.06 (7) (Note 2); to **renumber** NR 102.06 (2) (a), (f), and (fm); to **renumber and amend** NR 102.06 (2) (g), (i), and (4) (c); to **amend** NR 102.03 (intro.), 102.04 (4) (d) and (5) (b), 102.06 (1) and (2) (intro.), and 217.13 (2) (d) and (Note); to **repeal and recreate** NR 102.04 (4) (a) and 102.06 (3) (title); and to **create** NR 102.03 (1c), (1e), (1g), (1i), (1k), (1m), (1q), (1v), (6d), (6t) (Note), and (9), 102.04 (4) (am), (f) and (Note), (g), (6) (b), Table B, (Note 1), and (Note 2), 102.07, and 102 Subchapters III and IV, relating to processes for waterbody assessments and impaired waters listing, biological criteria for water quality standards, and biological confirmation of phosphorus impairments.

WY-23-13

Analysis Prepared by the Department of Natural Resources

1-3. Statutory Authority, Statutes Interpreted, and Explanation of Agency Authority:

- Sections 281.11 and 281.12, Wis. Stats., grant necessary powers and establish a comprehensive program under the WDNR to enhance quality management and protection of all waters of the state. It grants the WDNR general supervision and control to carry out the planning, management and regulatory programs necessary for prevention/reduction of water pollution and for improvement of water quality.
- Section 281.13, Wis. Stats., grants the department authority to research and evaluate the quality and condition of the state's natural water sources.
- Section 281.15, Wis. Stats. mandates that the department promulgate water quality standards, including water quality criteria and designated uses. It recognizes that different use categories and criteria are appropriate for different types of waterbodies, and that the department shall establish criteria which are not more stringent than reasonably necessary to assure attainment of the designated use for the water bodies in question.
- Section 281.65(4)(c) and (cd), Wis. Stats., directs the department to prepare a list of waters impaired by nonpoint source pollution.

4. Related Statutes or Rules:

The proposed rules are related to two other sets of rules currently in progress:

- Another section of ch. NR 102, s. NR 102.04, specifies designated uses for surface waters. Aquatic life and recreation designated uses are relevant to this rule package, as this rule package creates or updates criteria that are developed specifically to support aquatic life and recreation designated uses. The designated uses in s. NR 102.04 are currently undergoing a set of revisions through rule package WY-25-13. However, the rule revisions contained in that package do not directly impact the revisions proposed in this rule package.
- Rule package WT-17-12 creates processes for establishing site-specific criteria for phosphorus. A waterbody's eligibility for a site-specific criterion under that rule is largely dependent on whether the waterbody is attaining its phosphorus response indicators and biocriteria as specified in this rule package. Material created as part of this rule package is cross-referenced in the draft site-specific criteria rule. Therefore this rule package, WY-23-13, must be promulgated before or concurrent with rule package WT-17-12.

5. Plain Language Analysis:

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. The proposed subchapter establishing “narrative biocriteria” sets expectations for biological quality of these communities. It generally describes 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 its designated uses and should be placed on the impaired waters list (section 303 (d) list).

Dissolved oxygen criteria for Aquatic Life. Revisions to the existing dissolved oxygen criteria 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, and wastewater effluent channels.
- 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 1% 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 considerations already used by the department to assess water quality for recreation and aquatic life uses. A minor exception to this is the aquatic life chlorophyll *a* threshold for two-story fishery lakes, which is lowered slightly from 10 ug/L to 8 ug/L chlorophyll *a*, but this affects very few waters.

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 numeric phosphorus criteria is determined. It also incorporates flexibility for evaluating phosphorus impairments by creating a “combined assessment” 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 section 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.

6. Summary of, and Comparison with, Existing or Proposed Federal Statutes and Regulations:

Federal regulations require that states assess surface waters and create an impaired waters list every two years. In addition, federal regulations require states to develop water quality criteria. However, federal regulations do not specify detailed procedures for assessing waters or listing them as impaired. This rule package establishes a general structure that the department follows in assessing surface waters and reporting under ss. 303 (d) and 305(b) of the Clean Water Act, including listing waters on the impaired waters list. It also creates new water quality criteria to address the state’s water quality needs, including criteria for algae based on chlorophyll *a*, oxythermal criteria for two-story fishery lakes, narrative biocriteria, and updates to the existing dissolved oxygen criteria.

- Sec. 303 (d)(1)(A) of the Federal Water Pollution Control Act (Clean Water Act) requires states to develop an impaired waters list that identifies waters that are not meeting any water quality standard.
- Sec. 305(b)(1) of the Federal Water Pollution Control Act (Clean Water Act) requires states to prepare a biennial report documenting which waterbodies are attaining their designated uses.
- 40 CFR s. 130.4 Water Quality Monitoring. This section requires water quality monitoring and assessments of state waters.
- 40 CFR s. 130.7 Total maximum daily loads (TMDLs) and individual water quality-based effluent limitations. This section provides additional information related to requirements for developing the impaired waters list.
- 40 CFR s. 130.8 Water Quality Reports. States must submit water quality reports to EPA that include a water quality assessment of state waters.
- 40 CFR s. 130.3. Water quality standards. This section defines water quality standards as setting water quality goals for a waterbody that will protect its designated uses (such as protection of fish, wildlife, recreation, and public health and welfare). Criteria will be set to protect those uses.
- 40 CFR s. 131.11 Criteria. States must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.

7. Comparison with Similar Rules in Adjacent States:

- 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 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 section 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, Minnesota, Michigan and Indiana are the main states in EPA Region 5 that have two-story fishery lakes supporting coldwater fish. 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. Minnesota and Indiana have general dissolved oxygen and temperature criteria for cold waters, though they do not distinguish between lakes and streams. Michigan has dissolved oxygen criteria specific to lakes with coldwater fish. These criteria generally require maintenance of at least 7 mg/L dissolved oxygen within the lake at varying depths, depending on certain lake characteristics. Michigan's temperature criteria for all inland lakes also apply to coldwater lakes and, among other provisions, do not allow decreases in the volume of the thermocline/hypolimnion.

8. Summary of Factual Data and Analytical Methodologies Used and How Any Related Findings Support the Regulatory Approach Chosen:

All of the biological metrics included in this rule package are based on detailed analysis of Wisconsin data, as well as review of relevant literature, EPA recommendations, and approaches used in other states. These analyses are described in a technical support document for the rule. The biocriteria subchapter in this rule package outlines the types of biological assessments done by the department to assess a waterbody's fish, aquatic insect, and aquatic plant community. Recommended methods for assessing these metrics are included in Wisconsin's Consolidated Assessment and Listing Methodology (WisCALM) guidance. These metrics are based on published scientific papers and are standard methods used and refined by the department over time. The oxythermal habitat metric was newly developed as part of this rule package based on a modification of a method used in Minnesota, and was also recently published as a scientific paper. The algal metrics for recreation were developed using an analysis of Wisconsin lake user perception surveys. The suspended chlorophyll *a* criterion for aquatic life are based on trophic status to prevent a waterbody from becoming algal dominated and impairing feeding and reproduction of fish and insects. The stream benthic algae phosphorus response indicator is based on relationships between the occurrence of diatom taxa and phosphorus concentrations. After initial recommendations for this rule were developed, an external stakeholder committee met periodically over

the course of two years to review the recommendations and provide feedback, and additional information was provided throughout this process. EPA water quality standards staff were part of this committee and also provided technical input.

9. Analysis and Supporting Documents Used to Determine the Effect on Small Business or in Preparation of an Economic Impact Report:

This rule primarily pertains to biological assessments of surface waters. The department expects this rule package to have minimal economic impacts, 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 among Region 5 and other states. Because it largely reflects the status-quo for waterbody assessments, additional costs are not anticipated.
2. Biological metrics are not expected to 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 a waterbody achieves the water quality criterion for a pollutant, but the biological community is impaired and the department determines through further research that the pollutant is causing or contributing to the biological impairment, the department could only develop a more protective site-specific criterion for the pollutant in that waterbody through rulemaking. Based on discussions with U.S. EPA and other Region 5 states, where other states apply 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, 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 U.S. EPA. Development of such SSC are already allowable under existing authority.

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 Wisconsin Pollutant 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 algae levels already considered by the department to assess water quality and used to list a waterbody as impaired when its uses are adversely affected. The department's analysis shows 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 included in this rule package. The only way a more stringent phosphorus limit would be derived based on an exceedance of a chlorophyll *a* criterion is if a more-stringent phosphorus SSC was developed by the department through rulemaking and approved by U.S. EPA. Any potential costs associated with a more stringent SSC would be evaluated as part of that rulemaking process. The establishment of chlorophyll *a* criteria does not provide any new authority for developing SSC; that avenue is already available where algae levels are a concern. For these reasons, the department does not expect an additional economic impact based on this change.

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. This will provide the benefit of keeping a small number of waters off the impaired waters list that have healthy biological communities, but which may have periodic exceedances of the phosphorus statewide criterion. It would not add additional waters to the impaired waters list. No costs are associated with this portion of the rule.

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.

10. Effect on Small Business (initial regulatory flexibility analysis): As discussed above, this rule is not expected to incur additional costs for small businesses.

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12. Place where comments are to be submitted and deadline for submission:

A public hearing was held on September 12, 2019. Written comments were accepted at the public hearing, by regular mail and by email. The comment submission deadline was September 20, 2019.

SECTION 1. NR 102.03 (intro.) is amended to read:

NR 102.03 Definitions. In this chapter, the following definitions ~~are applicable to~~
~~terms used apply:~~

SECTION 2. NR 102.03 (1c), (1e), (1g), (1i), (1k), (1m), (1q), (1v), (6d), and (9) are created to read:

NR 102.03 (1c) “Benthic” means relating to the ecological zone at the bottom of a body of water, including the sediment surface and subsurface layers.

(1e) “Biocriterion” means a surface water quality criterion under subch. III that describes the structure and function of aquatic communities in a waterbody necessary to protect its designated aquatic life use.

(1g) “Chlorophyll *a*” means a green pigment present in all green plants and in cyanobacteria, responsible for the absorption of light to provide energy for photosynthesis.

(1i) “Clean Water Act” means the federal Clean Water Act of 1972 and amendments.

(1k) “Confidence interval” means a range within which the true value of a parameter is likely to occur, with a specified level of confidence.

(1m) “Diatom” means a common and diverse group of unicellular algae of the phylum Chrysophyta, having cell walls containing silica.

(1q) “Impounded flowing water” means a waterbody impounded by a constructed outlet structure on a river or stream that is not a reservoir as defined in sub. (4m).

(1v) “Macrophyte” means an aquatic plant large enough to be seen without the use of a microscope.

(6d) “Section 303 (d) list” means a list of waters that do not attain water quality standards and require a total maximum daily load analysis, as specified under section 303 (d) of the Clean Water Act, 33 USC 1313 (d).

(9) “U.S. EPA” means the United States environmental protection agency.

SECTION 3. NR 102.04 (4) (a) is repealed and recreated to read:

NR 102.04 (4) (a) *Dissolved oxygen*. 1. For streams, rivers, and impounded flowing waters, dissolved oxygen criteria apply to samples taken from the main channel near the area with greatest flow. For lakes or reservoirs, the dissolved oxygen criteria in this paragraph apply to the epilimnion of stratified lakes and to all but the deepest one meter of the water column of unstratified lakes.

2. Except as provided in subds. 3. to 7. and par. (am), surface waters shall attain a minimum dissolved oxygen concentration of 5 mg/L at all times.

3. A waterbody classified by the department as a trout class I or II water under s. NR 1.02 (7), a cold water community that is not a two-story fishery lake covered under par. (am), or a great lakes tributary used by salmonids for spawning during the period of habitation, shall attain all of the following:

a. A minimum dissolved oxygen concentration of 6.0 mg/L at all times.

b. A minimum dissolved oxygen concentration of 7.0 mg/L when cold water fish are spawning through fry emergence from their redds, or gravel nests.

Note: The period from spawning through fry emergence from their gravel nests is approximately mid-October through April, but varies depending on water temperature and location in the state.

c. Dissolved oxygen concentrations and diurnal patterns may not be altered from natural background levels to such an extent that cold water populations are adversely affected.

4. A waterbody classified by the department as trout class III under s. NR 1.02 (7) shall attain a minimum dissolved oxygen concentration of 6.0 mg/L at all times.

5. A waterbody for which a use attainability analysis under 40 CFR 131.10 (g) (1) to (6) demonstrates that its otherwise applicable designated use category is unattainable shall attain the following:

a. For a coldwater community with an approved use attainability analysis, a minimum dissolved oxygen concentration of 5 mg/L at all times.

b. For any other community, a minimum dissolved oxygen concentration of 3 mg/L at all times.

Note: Waterbodies described in subd. 5 are also known as altered warmwater or altered macroinvertebrate waters.

6. A waterbody designated by the department as limited forage fish shall attain a minimum dissolved oxygen concentration of 3 mg/L at all times.

7. A waterbody designated by the department as limited aquatic life or wetlands, or classified as diffuse surface waters or wastewater effluent channels shall attain a minimum dissolved oxygen concentration of 1 mg/L at all times when water is present.

SECTION 4. NR 102.04 (4) (am) is created to read:

NR 102.04 (4) (am) *Oxythermal layer thickness for two-story fishery lakes.* 1. ‘Criteria.’ A two-story fishery lake shall maintain, during its period of summer stratification, an oxythermal layer of at least 1 meter in thickness that maintains both a dissolved oxygen concentration of at least 6 mg/L and a maximum temperature of the following:

- a. For a two-story fishery lake with lake trout, 57° F or less.
- b. For a two-story fishery lake with whitefish but not lake trout, 66° F or less.
- c. For a two-story fishery lake with cisco but not whitefish or lake trout, or that the department manages for brook, brown, or rainbow trout, 73°F or less.
- d. For a two-story fishery lake with multiple coldwater fish species, the applicable criterion under subd. 1. a. to c. is that for the lake’s species requiring the lowest temperature.

2. ‘Assessment.’ a. The monitoring period for the criteria under subd. 1. is June 1 to September 15. When monitoring for assessment purposes, depth profiles of temperature and dissolved oxygen shall, whenever possible, be taken in increments of 1 meter or less near the deepest part of the lake, at least monthly July to September. Samples taken outside this time frame but during summer stratification may also be used to determine assessment.

Note: Reservoirs, multi-lobed lakes, or very large lakes may need more than one sampling station to assess the lake.

b. If at any time during a lake’s summer stratification the applicable criterion in subd. 1. is not met, that year is an exceedance year. At least 2 years of data are needed to make an impairment determination. If any 2 or more years within the most recent 5-year period are exceedance years, the lake is not attaining the water quality criterion and shall be listed on the section 303 (d) list. If insufficient data are available from the most recent 5-year period, data from up to 10 years may be used if representative of current conditions.

SECTION 5. NR 102.04 (4) (b) is repealed.

SECTION 6. NR 102.04 (4) (d) is amended to read:

NR 102.04 (4) (d) ~~*Other*~~*Toxic substances.* Unauthorized concentrations of substances are not permitted that alone or in combination with other materials present are toxic to fish or other aquatic life. Surface waters shall meet the acute and chronic criteria as set forth in or

developed pursuant to ss. NR 105.05 and 105.06. ~~Surface waters shall meet the criteria which correspond to the appropriate fish and aquatic life subcategory for the surface water, except as provided in s. NR 104.02 (3).~~

SECTION 7. NR 102.04 (4) (f) and (Note) and (g) are created to read:

NR 102.04 (4) (f) *Chlorophyll a*. 1. ‘Criteria.’ a. Mean suspended chlorophyll *a* concentrations in lakes and reservoirs other than stratified two-story fishery lakes shall not exceed 27 ug/L.

b. Mean suspended chlorophyll *a* concentrations in stratified two-story fishery lakes shall not exceed 8 ug/L.

2. ‘Assessment.’ Data requirements are the same as those specified in s. NR 102.07 (1) (a) 1., except that the sampling period for chlorophyll *a* is July 15 to September 15. To determine attainment of the chlorophyll *a* criterion under subd. 1., the department shall compare the waterbody’s mean suspended chlorophyll *a* concentration during the sampling period to the criterion, using the confidence interval approach described under s. NR 102.52 (2) (b) to (c) to determine if additional samples are needed.

Note: The aquatic life chlorophyll *a* criteria do not apply to streams, rivers, or impounded flowing waters, as they were established based on lake trophic status levels.

(g) *Other criteria.* Surface waters shall meet all other criteria that correspond to the appropriate aquatic life subcategory for the surface water, including narrative criteria specified in sub. (1) and biocriteria described in subch. III.

SECTION 8. NR 102.04 (5) (b) is amended to read:

NR 102.04 (5) (b) *Exceptions.* Whenever the department determines, in accordance with the procedures specified in s. NR 210.06 (3), that wastewater disinfection is not required to protect recreational uses, the criteria specified in ~~par. (a)~~ sub. (6) (a) and in chs. NR 103 and 104 do not apply.

SECTION 9. NR 102.04 (6) (b), Table B, (Note 1), and (Note 2) are created to read:

[Note to LRB: NR 102.04 (6) (a) and Table A are created in Board Order WY-17-15.]

NR 102.04 (6) (b) Frequency of moderate algae levels. 1. ‘Criteria.’ A moderate algae level is defined as a chlorophyll *a* concentration of 20 ug/L or greater. Lakes, reservoirs, and impounded flowing waters shall not exceed the frequency of moderate algae levels specified in Table B during the summer sampling period.

Table B
Recreational use criteria for frequency of moderate algae levels

Waterbody Type¹	Subcategory	Criteria for frequency of moderate algae levels
Lakes, Reservoirs, Impounded Flowing Waters (includes cold and warm)	Impounded flowing water, Unstratified drainage, Unstratified seepage	Does not exceed 20 ug/L chlorophyll <i>a</i> for more than 30% of days during the summer sampling period ²
	Stratified drainage, Stratified seepage	Does not exceed 20 ug/L chlorophyll <i>a</i> for more than 5% of days during the summer sampling period ²
	Stratified two-story fishery	Does not exceed 20 ug/L chlorophyll <i>a</i> for more than 5% of days during the summer sampling period ²

¹ Terms used for waterbody types and subcategories are defined in s. NR 102.03.

² Summer sampling period is July 15 to September 15.

Note: Lakes and reservoirs are subcategorized based on both their stratification status (stratified vs. unstratified) and whether or not they have an outlet stream or river (drainage vs. seepage). To find a lake or reservoir’s subcategory, also known as its natural community, go to the department’s Surface Water Data Viewer online map at <https://dnr.wi.gov/topic/surfacewater/swdv/> and turn on the layer for Surface Water: Lake Natural Communities. On the natural communities layer, unstratified is referred to as “shallow”, and stratified is referred to as “deep.” Headwater and lowland lakes are types of drainage lakes.

Note: The EPA has set human health swimming advisory levels for microcystin and cylindrospermopsin that accurately reflect the latest scientific information on the potential human health effects from recreational exposure to these two cyanotoxins. The department recommends that local and tribal public health agencies use these swimming advisory levels for notification purposes in recreational waters to protect the public. More information can be found at <https://dnr.wi.gov/lakes/bluegreenalgae/Default.aspx>.

2. 'Assessment.' Data requirements are the same as those specified in s. NR 102.07 (2) (a) 1., except that the sampling period for chlorophyll *a* in all waterbody types is July 15 to September 15. To determine attainment of the criterion, the department shall statistically determine a waterbody's frequency of moderate algae levels during the chlorophyll *a* summer sampling period using the confidence interval approach as described under s. NR 102.52 (2) (b) and (c) and compare that frequency to the applicable criterion in Table B.

SECTION 10. NR 102.06 (1) is amended to read:

NR 102.06 (1) GENERAL. This section identifies the water quality criteria for total phosphorus that shall be met in surface waters. Assessment procedures for waterbodies are specified in s. NR 102.07.

SECTION 11. NR 102.06 (2) (intro.) is amended to read:

NR 102.06 (2) DEFINITIONS. In this section, the following definitions apply:

SECTION 12. NR 102.06 (2) (a), (f), and (fm) are renumbered 102.03 (1o), (4m) and (6h).

SECTION 13. NR 102.06 (2) (g) and (2) (i) are renumbered 102.03 (6p) and (6t) and amended to read:

NR 102.03 (6p) "Stratified lake or reservoir" means a lake or reservoir where ~~either of~~ sufficient field data demonstrate that the lake is dimictic or, in absence of sufficient field data, the following ~~equation~~equation results in a value of greater than 3.8:

$$\frac{\text{Maximum Depth (meters)}}{\text{Log}_{10}\text{Lake Area (hectares)}} \text{--- } 0.1$$

$$\text{Log}_{10}\text{Lake Area (hectares)}$$

~~$$\frac{\text{Maximum Depth (feet)} * 0.305}{\text{Log}_{10}\text{Lake Area (acres)}} \text{--- } 0.1$$~~

~~$$\text{Log}_{10}\text{Lake Area (acres)} * 0.405$$~~

(6t) ~~"Stratified two-story fishery lake" means a stratified lake which has supported a cold water fishery in its lower depths within the last 50 years or~~ "two-story fishery lake" means a lake greater than 5 acres in size that is typically stratified in the summer, with the potential for an oxygenated hypolimnion, that has documentation since 1975 of a population of cold water fish

species such as cisco, whitefish, or trout that is sustained through natural reproduction or long-term active stocking with year-to-year survival.

SECTION 14. NR 102.03 (6t) (Note) is created to read:

NR 102.03 (6t) Note: A list of two-story fishery lakes that contain naturally reproducing lake trout, whitefish, or cisco, or are stocked and managed by the department for brook, brown, rainbow, or lake trout, is available on the department's designated uses website at <https://dnr.wi.gov/topic/SurfaceWater/usedesignations.html>.

SECTION 15. NR 102.06 (3) (title) is repealed and recreated to read:

NR 102.06 (3) (title) RIVERS, STREAMS, AND IMPOUNDED FLOWING WATERS.

SECTION 16. NR 102.06 (4) (c) is renumbered 102.06 (3) (c) and amended to read:

NR 102.06 (3) (c) ~~Waters impounded on rivers or streams that don't meet the definition of reservoir in this section~~ An impounded flowing water shall meet the river and/or stream criterion in ~~sub. (3) par. (a) or (b)~~ par. (a) or (b) that applies to the primary stream or river entering the impounded water.

SECTION 17. NR 102.06 (7) (Note 2) is repealed. [Note that Board Order WY-09-18 renumbers (7) to (7) (a).]

SECTION 18. NR 102.07 is created to read:

NR 102.07 Phosphorus assessment procedures. (1) DEFINITIONS. In this section, the following definitions apply:

(a) "Total phosphorus" has the meaning defined in s. NR 102.06 (2) (j).

(b) "Weather-controlled total phosphorus concentration" means a waterbody's mean or median total phosphorus concentration during the applicable assessment period, estimated from measured data while controlling for weather variability using a method such as the department's Phosphorus Mixed Effects Regression calculation method.

Note: A mean concentration is used for lakes or reservoirs; a median concentration is used for streams, rivers, or impounded flowing waters. Total phosphorus data may be submitted

and weather-controlled concentrations can be obtained by contacting the department at DNRSWIMS@wisconsin.gov for access to the department's SWIMS database. The statistical computer programming script to run the Phosphorus Mixed Effects Regression calculation can be obtained through the department's Water Evaluation Section by contacting the department's call center at 1-888-WDNRINFO (1-888-936-7463) or using options provided on its website at <https://dnr.wi.gov/contact/>.

(2) GENERAL ASSESSMENT PROCEDURE. (a) *Data requirements.* 1. 'Lakes and reservoirs.' The total phosphorus criteria specified in s. NR 102.06 (4) apply to samples taken near a lake or reservoir's deepest point, within 2 meters of the surface. For assessment purposes samples shall, whenever possible, be taken at least once per month for 3 months during the sampling period of June 1 to September 15. When calculating a lake or reservoir's mean total phosphorus concentration, the department shall use at least 2 years of data from the sampling period.

Note: Reservoirs, multi-lobed lakes, or very large lakes may need more than one sampling station to assess the lake.

2. 'Flowing waters.' The total phosphorus criteria specified in s. NR 102.06 (3) apply to samples taken from the main channel near the area with greatest flow. For assessment purposes samples shall, whenever possible, be taken at least once per month for 6 months during the sampling period of May 1 to October 31. When calculating the median total phosphorus concentration for a stream, river, or impounded flowing water, the department shall use at least one year of data from the sampling period.

3. 'Assessment timeframe for lakes, reservoirs and flowing waters.' All representative data from the most recent 5 years shall be used for assessments, but data from the most recent 10 years may be used if representative of current conditions. If fewer than the recommended number of samples in subd. 1. or 2. are available, the department may be able to make an assessment determination on a case-by-case basis. The department may calculate a site's weather-controlled total phosphorus concentration, defined in s. NR 102.07 (1) (b), to correct for weather variability and use this value to make an assessment determination in place of the mean or median calculated under subd. 1. or 2.

Note: The procedure in subd. 2 is also used for determining upstream concentrations of phosphorus under s. NR 217.13 (2) (d) for purposes of calculating a water-quality based effluent limit for a Wisconsin pollutant discharge elimination system (WPDES) permit.

(b) *Exceedance determination.* The department shall compare the mean or median calculated under par. (a) to the waterbody's applicable total phosphorus criterion specified in s. NR 102.06 to determine whether the waterbody is exceeding the criterion. To determine whether additional data are needed to make an attainment decision for section 303 (d) listing purposes, the department shall apply the confidence interval approach described under s. NR 102.52 (2) (b) to (c). If application of those methods indicates that the waterbody is exceeding the phosphorus criterion, the department shall propose to include the waterbody on the section 303 (d) list as impaired for total phosphorus unless the department determines the waterbody is not exhibiting a biological response to phosphorus as specified in subs. (3) to (6).

(3) COMBINED ASSESSMENT PROCEDURE. (a) This subsection establishes a combined assessment approach for making total phosphorus attainment determinations for surface waters in cases specified in par. (b). This approach is designed to account for variability in how waterbodies respond to phosphorus. The combined approach evaluates a waterbody's quality by considering its total phosphorus concentration in conjunction with an evaluation of the phosphorus response indicators specified in subs. (4) to (6). The phosphorus response indicators characterize the condition or abundance of aquatic organisms that are responsive to total phosphorus to determine whether aquatic life and recreation uses are being met. Together, the total phosphorus criteria and response indicators may be used to determine whether the phosphorus water quality standards are attained or whether the waterbody should be listed as impaired for total phosphorus on the section 303 (d) list.

(b) 1. If a waterbody exceeds its total phosphorus criterion using the general assessment procedure under sub. (2) and the waterbody's calculated phosphorus concentration is within the combined assessment range shown in Table C, the department may make the total phosphorus attainment or impairment determination using phosphorus response indicators specified in subs. (4) to (6) if sufficient biological data are available to conduct these assessments. In that case, the following decision protocols apply:

a. A waterbody that attains all of its applicable phosphorus response indicators under subs. (4) to (6) may be excluded from the section 303 (d) listing of waters impaired for phosphorus.

Note: If a waterbody is not considered impaired using the combined approach, it may be a candidate for a less stringent phosphorus site-specific criterion under ch. NR 119. If a

waterbody attains its phosphorus criterion but one or more phosphorus response indicators are not attained, it may be a candidate for a more stringent site-specific phosphorus criterion under ch. NR 119.

b. If a waterbody does not attain one or more of the applicable phosphorus response indicators in subs. (4) to (6) or if the department does not have sufficient data to evaluate all of the applicable response indicators, then the waterbody shall be considered impaired for total phosphorus and the department shall propose inclusion of the waterbody on the section 303 (d) list as not attaining its phosphorus criterion. As part of the public comment period for the section 303 (d) list, the department shall provide a list of waterbodies needing additional data to determine whether phosphorus response indicators are met. If sufficient phosphorus response indicator data becomes available in the future, the waterbody may be reassessed.

2. If a waterbody exceeds its total phosphorus criterion using the general assessment procedure under sub. (2) and the waterbody’s calculated phosphorus concentration also exceeds the upper limit of the combined assessment range shown in Table C, then the waterbody shall be considered impaired for total phosphorus regardless of attainment of phosphorus response indicators, and the department shall propose to include the waterbody on the section 303 (d) list.

Table C
Range for applying combined assessment for total phosphorus¹

Waterbody Type	Total Phosphorus Criterion (ug/L)	Combined Approach Range² (ug/L total phosphorus)
Stream or its Impounded Flowing Water	75	75 to <150
River or its Impounded Flowing Water	100	100 to <200
Unstratified Reservoirs, Unstratified Drainage or Seepage Lakes	40	40 to <60
Stratified Reservoirs, Stratified Drainage Lakes	30	30 to <45
Stratified Seepage Lakes	20	20 to <30
Two-Story Fishery Lakes	15	15 to <22.5

¹To determine whether a waterbody falls into the combined approach range, compare the lower confidence limit of the waterbody’s two-sided 80% confidence interval around the mean (for lakes/streams) or median (for rivers/streams) total phosphorus concentration to the ranges in the table.

²For streams and rivers the combined criteria range is between the applicable total phosphorus criterion and two times that criterion. For lakes, the range is between the applicable total

phosphorus criterion and 1.5 times that criterion. If a waterbody has an approved site-specific phosphorus criteria, the combined criteria range for that waterbody shall be calculated using these multiplication factors.

(4) LAKE AND RESERVOIR PHOSPHORUS RESPONSE INDICATORS. A lake or reservoir 5 acres or greater for which the total phosphorus concentration is within the combined approach range specified in Table C shall be listed on the section 303 (d) list as impaired for phosphorus unless it attains all of the following phosphorus response indicators:

(a) *Frequency of moderate algae levels.* The recreation criteria for frequency of moderate algae levels as specified in s. NR 102.04 (6) (b).

(b) *Chlorophyll a.* The aquatic life criterion for chlorophyll *a* specified in s. NR 102.04 (4) (f).

(c) *Aquatic plants.* The aquatic plant phosphorus response indicator for aquatic life use that is specified in this paragraph. Aquatic plants, or macrophytes, respond to nutrient enrichment in lakes and reservoirs. Plants are sampled using a grid of sampling points across the lake to determine the proportion of vegetated points that support plant species that are sensitive to or tolerant of high-phosphorus conditions. The resulting percentages are compared to the Macrophyte Assessment of Condition for Phosphorus attainment thresholds shown in Table D. This indicator is attained if the most recent plant survey during the assessment period, or other more representative survey, attains the applicable threshold in Table D.

Table D
Lake aquatic plant community phosphorus response indicator

Lake Subcategory¹	Macrophyte Assessment of Condition for Phosphorus attains if:
Northern Seepage	Phosphorus Tolerant $\leq 44\%$
Northern Drainage	Phosphorus Sensitive $> 51\%$
Southern Seepage	Phosphorus Sensitive $> 26\%$
Southern Drainage	Phosphorus Sensitive $> 42\%$

¹ In Table D, northern lakes are those north of 44.84707°N latitude, and southern lakes are those south of that latitude. Seepage and drainage lakes follow the definitions in s. NR 102.03 (6h) and (1o). Seepage lakes include both stratified and unstratified seepage lakes, and drainage lakes include both stratified and unstratified drainage lakes. A two-story fishery lake is assigned to the appropriate category in Table D based on its location and whether it is a seepage or drainage

lake. Plant phosphorus response indicators have not been established for the Great Lakes and lakes less than 5 acres in surface area.

Note: When evaluating the aquatic plant community in a waterbody, the department uses sampling methods that are available on the department's website in the Electronic Guidance and Documents (EGAD) system at <https://dnr.wi.gov/water/egadsearch.aspx> by searching for Recommended Baseline Monitoring of Aquatic Plants in Wisconsin. Aquatic plant data may be submitted and Macrophyte Assessment of Condition for Phosphorus (MAC-P) scores can be obtained by contacting the department at DNRSWIMS@wisconsin.gov for access to the department's SWIMS database. The statistical computer programming script to run the MAC-P calculation and the point-intercept sampling methods can be obtained through the department's Water Evaluation Section by contacting the department's call center at 1-888-WDNRINFO (1-888-936-7463) or using options provided on its website at <https://dnr.wi.gov/contact/>.

(d) *Oxythermal layer thickness*. The oxythermal layer thickness criteria specified in s. NR 102.04 (4) (am). This paragraph applies only to two-story fishery lakes.

(5) RIVER AND IMPOUNDED FLOWING WATERS PHOSPHORUS RESPONSE INDICATOR. A river listed in s. NR 102.06 (3) (a), or its impounded flowing waters, for which the total phosphorus concentration is within the combined approach range specified in Table C shall be listed on the section 303 (d) list as impaired for phosphorus unless it exceeds 20 ug/L chlorophyll *a* for fewer than 30% of days during the summer sampling period of July 15 to September 15.

(6) STREAM PHOSPHORUS RESPONSE INDICATORS. (a) *General*. A stream for which the total phosphorus concentration is within the combined approach range specified in Table C shall be listed on the section 303 (d) list as impaired for phosphorus unless it attains the phosphorus response indicators specified in this subsection. When applying the phosphorus response indicators for streams, the department may apply the benthic algal biomass indicator under par. (b) as a screening tool before determining whether the benthic diatom assessment under par. (c) is necessary for an attainment determination. If available, benthic diatom assessment results under par. (c) supersede results from the benthic algal biomass screening under par. (b).

(b) *Benthic algal biomass screening*. Benthic algal biomass is a measure of primary productivity in streams, and is quantified using a viewing bucket assessment method along stream transects. The benthic algal biomass phosphorus response indicator is applicable to both the aquatic life use and the recreational use, and may be used to make an initial use attainment

determination as specified in Table E. If results from the benthic algal biomass assessment conclusively demonstrate attainment or non-attainment of the benthic algal biomass indicator, no benthic diatom analysis under par. (c) is necessary for the attainment decision. If the benthic algal biomass assessment is inconclusive according to Table E, or in cases where the assessment is inappropriate due to silted substrate, additional benthic diatom analysis under par. (c) is required to make the aquatic life use attainment determination. If a stream's benthic algal biomass score is inconclusive and a benthic diatom sample is not available, the stream shall be proposed for inclusion on the section 303 (d) list.

Table E
Stream benthic algal biomass phosphorus response indicator.

Benthic algal biomass, viewing bucket score (0-3)	Attainment decision	
	Aquatic Life Use	Recreational Use
< 1	Attained ¹	Attained
1 - 2	Inconclusive; assess benthic diatoms	
> 2	Not attained	Not attained

¹ If the mean score is <1 but 20% or more of individual transect points score a 3, a benthic diatom assessment under par. (c) is required to make an attainment determination.

Note: Wisconsin's benthic algal viewing bucket methods are available on the department's website in the Electronic Guidance and Documents (EGAD) system at <https://dnr.wi.gov/water/egadsearch.aspx> by searching for Viewing Bucket Method for Estimating Algal Abundance in Wadeable Streams.

(c) *Benthic diatoms.* Benthic diatoms are an algal taxonomic group that represents primary producer community structure, and are used for assessment of the aquatic life use. This assessment is needed only if the benthic algal biomass assessment for aquatic life under par. (b) is inconclusive or inappropriate due to siltation. A stream's diatom taxa are statistically analyzed using Wisconsin's weighted average Diatom Phosphorus Index, or DPI, to estimate a diatom-inferred total phosphorus concentration. To determine use attainment, the diatom-inferred total phosphorus concentration shall be compared to the stream phosphorus criterion of 75 ug/L phosphorus using the confidence interval approach described under s. NR 102.52 (2) (b) to (c). If the diatom-inferred phosphorus concentration is below 75 ug/L, the phosphorus response

indicator is attained. If more than one sample is available from the most recent five years, the mean score of the surveys is calculated and compared to the criterion as above.

Note: The statistical code to run the Wisconsin DPI calculation can be obtained through the department's Water Evaluation Section by contacting the department's call center at 1-888-WDNRINFO (1-888-936-7463) or using options provided on its website at <https://dnr.wi.gov/contact/>.

SECTION 19. NR 102 Subchapters III and IV are created to read:

Subchapter III – Biocriteria

NR 102.40 Narrative biocriteria and biological assessments. (1) GENERAL. This section establishes narrative biocriteria that characterize the biological community condition that is expected to support aquatic life designated uses specified in s. NR 102.04 (3) for surface waters. This section also establishes assessment requirements for the evaluation of biocriteria.

(2) NARRATIVE BIOCRITERIA. (a) The aquatic life uses under s. 102.04 (3), except for those specified in s. 102.04 (3) (d) to (e), shall be considered suitable for the protection and propagation of a balanced aquatic life community. Surface waters designated with those uses shall support the growth, development, reproduction, and life cycle of the aquatic life communities for their designated aquatic life use categories, although they may exhibit moderate changes in aquatic life community structure due to loss of some rare native taxa or shifts in relative abundance. A waterbody's biological quality shall be within the range of the quality found in similar waterbodies under natural conditions. A waterbody with distinct natural characteristics that result in an aquatic life community different from or less diverse than other waters in the same use category may be considered supporting its aquatic life use if those differences are clearly related to natural characteristics.

(b) A surface water that does not support a balanced aquatic life community as designated under s. 102.04 (3) (d) to (e) shall support its highest attainable use given its habitat and potential.

(c) A surface water shall maintain at least the highest biological condition it has achieved since 1975.

Note: U.S. EPA specifies November 28, 1975 as the benchmark date from which to determine “existing uses” for aquatic life (40 CFR s. 131.3 (e)).

Note: Examples of waterbodies with distinct natural characteristics are wetland-dominated streams, naturally acidic bog lakes, and ephemeral streams with only small areas of short-term refugia. Biological condition assessments should not be conducted during periods when there is insufficient water due to natural conditions to support aquatic life.

(3) ASSESSING SUPPORT OF BIOCRITERIA. Biological assessments for determining attainment of biocriteria include any of the following:

(a) Biological community assessments. To conduct biological community assessments, the department shall use documented methods that have undergone technical review and produce consistent, objective, and repeatable results that account for methodological uncertainty and natural environmental variability. Such methods include indices of biological integrity or similar tools calculated from measured attributes of resident fish, aquatic invertebrates, aquatic plants, or other aquatic communities. Such indices or tools may include measures of species composition, diversity, and abundance; feeding and reproduction characteristics; condition of individual organisms; or other scientifically objective, credible, and supportable factors. Historic records of native species may also be used to assess whether a waterbody exhibits loss of native species.

(b) Biological integrity trends. All surface waters shall maintain existing biological integrity, such that no waterbody or portion thereof shall experience a significant declining trend since 1975 using indicators under par. (a) or other indicators of biological condition, as demonstrated through scientifically-based documentation.

Note: An example of methods the department uses for assessing biological health of surface waters are those found in the department’s guidance for waterbody assessments, “Wisconsin Consolidated Assessment and Listing Methodology,” or WisCALM. Protocols for assessing attainment of biocriteria using metrics such as fish or macroinvertebrate indices of biotic integrity or the macrophyte assessment of condition are contained in, or referenced in, WisCALM. WisCALM is available on the department’s surface water assessment website at <https://dnr.wi.gov/topic/SurfaceWater/assessments.html>.

(4) BIOCRITERIA AND SECTION 303 (D) LISTING. The results of the biological assessments under sub. (3) may be used for purposes of water quality assessment, including those assessments required by sections 303 (d) and 305 (b) of the Clean Water Act, 33 USC 1313 (d)

and 1315 (b). If a waterbody does not attain one or more of its biological assessment expectations, it may be considered to not support its aquatic life use and may be proposed for the section 303 (d) list. However, in the section 303 (d) listing, the department may not formally attribute non-support of the aquatic life use to a specific pollutant until the department conducts an evaluation of potential causes, including nonchemical stressors such as habitat degradation or hydrological modification, and identifies one or more specific pollutants causing biological degradation.

Note: If a waterbody is not attaining water quality criteria for a pollutant under chs. NR 102 to 105 or any other relevant chapter, it will be listed on the section 303 (d) list regardless of biocriteria attainment, unless otherwise specified in the pollutant's criteria or procedures specified in those chapters (for instance, the combined assessment approach for phosphorus under s. NR 102.07), or if site-specific criteria are developed and attained.

Subchapter IV – Waterbody Assessments and Reporting

NR 102.50 Waterbody assessments and reporting. As required under sections 303 (d) and 305 (b) of the Clean Water Act, 33 USC 1313 (d) and 1315 (b), the department shall report to U.S. EPA on the status of the state's waterbodies and attainment of water quality standards every two years. Waterbody assessments are used to determine the condition of the state's surface waters or segments thereof and whether waterbodies are attaining state and federal surface water quality standards.

NR 102.51 Assessment types. The department may conduct different types of assessments to determine the status of waterbody health and attainment of water quality standards, depending on availability of data or methods used to collect the data. The department shall, at a minimum, conduct all of the following:

(1) STATEWIDE CONDITION ASSESSMENTS. As part of the biennial assessment report required under section 305 (b) of the Clean Water Act, 33 USC 1315 (b), and 40 CFR 130.8 and 130.10 (a) (1), the department shall report on water quality status and trends at the state, regional, or watershed levels. The department shall assess the extent to which surface waters of the state provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water. Broad-scale approaches may be

used to conduct these assessments, including randomized monitoring designs or other appropriate statistical methods.

(2) INDIVIDUAL WATERBODY ASSESSMENTS AND SECTION 303 (D) LIST. The department shall identify and report on waters not meeting any applicable water quality standard, pursuant to section 303 (d) of the Clean Water Act, 33 USC 1313 (d), and 40 CFR 130.7 (b) and 130.10 (b) (2). The department shall assess individual waterbodies for which datasets meeting minimum requirements are readily available, as specified in the department's water quality standards and assessment protocols under s. NR 102.52, to determine whether a waterbody is attaining water quality standards. Waters are assessed against each applicable water quality criterion or biocriterion independently, unless a combined assessment procedure is specified in rule. Waters that are not attaining applicable water quality standards shall be placed on the section 303 (d) list.

Note: Examples of criteria that are not assessed independently are the combined assessment procedures for phosphorus specified in s. NR 102.07 (3).

Note: This subsection does not preclude other types of assessments that may be needed for other purposes. The department has authority to research and assess the quality and condition of the state's waters under s. 281.13, Wis. Stats.

Note: As required under 40 CFR 130.7 (b) (4), waters on the section 303 (d) list may require a TMDL analysis. The department will prioritize and develop TMDLs, as discussed in subch. III of ch. NR 212.

NR 102.52 Assessment protocols. (1) GENERAL. The department's protocols for assessing waterbodies shall be consistent with the state's water quality standards and federal regulations and be based on relevant scientific information. The department's protocols may include components such as minimum data requirements, sampling methods, quality control, statistical analysis of data, allowable frequency of exceedance of criteria, and use of professional judgment.

Note: When assessing waterbodies, the department uses its guidance for waterbody assessments titled "Wisconsin Consolidated Assessment and Listing Methodology," or WisCALM. Although a description of the state's assessment methodology is required to be submitted to U.S. EPA, U.S. EPA does not approve or disapprove the state's assessment methodology under section 303 (d) of the Clean Water Act.

(2) **SAMPLE VARIABILITY AND CONFIDENCE INTERVALS.** (a) For assessment determinations, the department may determine that multiple samples are necessary to account for variability inherent in the waterbody, sampling results, or other conditions. The department may evaluate attainment of criteria using assessment methodology that accounts for both the central tendency of the data, such as the mean or median, and the variability of the samples.

(b) The department may apply a confidence interval approach to determine the number of samples needed and to increase certainty in the attainment decision. For metrics expressed as a mean or percentile of a group of samples, the department may use the two-sided 80% confidence interval of the mean or percentile for assessment. Other methods of calculating a confidence interval may be applied as appropriate for a specific metric, data type, or statistical goal. Once the confidence interval is determined under this paragraph, it is then compared to the criterion as specified in par. (c).

(c) When applying an approach under par. (b), the department shall compare the confidence interval to the applicable criterion or threshold using one of the following evaluation criteria:

1. If the entire confidence interval is attaining the criterion, no further samples are needed to determine that the waterbody is attaining the criterion.

2. If the entire confidence interval is not attaining the criterion, no further samples are needed to determine that the waterbody is not attaining the criterion.

3. If the criterion is within the confidence interval, the assessment will be deferred until more data can be collected with the goal of narrowing the interval to determine whether subd. 1. or 2. applies. After further data collection, if the criterion continues to be within the confidence interval, the attainment determination shall be made by directly comparing the sample mean or percentile to the criterion.

Note: With confidence intervals calculated under par. (b), there is 90% confidence that attainment decision is correct because there is 80% confidence that the waterbody's true value is within the interval, 10% confidence that it is greater than the interval, and 10% confidence that it is less than the interval.

NR 102.53 Reporting, public participation, and approvals. (1) **REPORT DEVELOPMENT.** For development of the biennial assessment report and section 303 (d) list, the

department shall assemble, evaluate, and submit water quality-related data, information, and assessment protocols to U.S. EPA.

(2) PUBLIC PARTICIPATION. (a) The department shall solicit assessment data from citizens and partner groups prior to the waterbody assessment process. Readily available data sets that meet minimum data requirements and are submitted in the department's specified format during the biennial data solicitation period shall be considered by the department when conducting assessments.

(b) The department shall hold a public informational hearing and a public comment period of at least 30 days on the draft list of assessments resulting in proposed changes to the section 303 (d) list. The department shall provide notice of the public informational hearing and information regarding where written comments may be submitted on its website and through an electronic notification system.

Note: Prior to the data solicitation period under par. (a), the department provides an opportunity for the public to comment on the assessment guidance. The department generally responds to comments received during the comment periods for the assessment guidance and the draft section 303 (d) list. The department will provide a template for data submittal on the department's waterbody assessment website. The public can subscribe to the electronic notification system for the water quality standards program on the department's home page at <http://dnr.wi.gov/>.

(3) SUBMITTAL OF RESULTS TO U.S. EPA. After the public participation process is completed, the department shall submit waterbody assessment results to U.S. EPA Region 5 by April 1 of every even numbered year for approval. Assessment results shall be submitted in a report that integrates both statewide condition and individual waterbody assessment results to satisfy the requirements of sections 305 (b) and 303 (d) of the Clean Water Act, respectively.

Note: U.S. EPA has authority to approve or disapprove the section 303 (d) list.

(4) PUBLICATION OF THE FINAL SECTION 303 (D) LIST. The U.S. EPA-approved section 303 (d) list shall be made public and available on the department's website.

Note: The section 303(d) list and statewide condition assessments are available on the department's website at <https://dnr.wi.gov/topic/SurfaceWater/assessments.html>.

SECTION 20. NR 217.13 (2) (d) and (Note) are amended to read:

NR 217.13 (2) (d) *Upstream concentrations (Cs)*. The representative upstream concentration of phosphorus shall be used in specific water quality based effluent limit calculations. At a minimum, the representative upstream concentration shall be either a concentration derived by the department based on data from the specific stream or from a similar location. ~~Where data is collected on the upstream location, the concentration used shall equal the median of at least four samples collected throughout the period of May through October. All samples collected during a 28 day period shall be considered as a single sample and the average of the concentrations used. Where data is available from more than one year in the last five years, the department may use all of the years of data in the calculation of the upstream concentration. The department may also use data older than five years provided that it is representative of current conditions.~~ The site's upstream concentration shall be calculated as the weather-controlled median phosphorus concentration using the procedures specified in s. NR 102.07 (2) (a) 2. At least 6 monthly samples, taken from May to October within a single year, shall be used for the calculation. The department shall compare the weather-controlled median to the waterbody's total phosphorus criterion to determine whether to apply water quality based effluent limits. Neither the two-sided 80% confidence interval around the median specified in s. NR 102.07 (2) (b) nor the combined assessment procedures specified in s. NR 102.07 (3) to (6) are applicable for purposes in this paragraph. Upstream concentrations may not be measured at a location within the direct influence of a point source discharge. The determination of upstream concentrations shall be evaluated at each permit reissuance.

Note: The department has guidance on collection methods for ambient water sampling and may develop guidance for the evaluation of representative data. The guidance may be obtained from the offices of the department of natural resources, bureau of ~~watershed management~~ water quality at 101 South Webster Street, P.O. Box 7921, Madison, Wisconsin 53707.

SECTION 21. EFFECTIVE DATE. This rule takes effect on the first day of the month following publication in the Wisconsin Administrative Register as provided in s. 227.22 (2) (intro.), Stats.

SECTION 22. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on December 11, 2019.

Dated at Madison, Wisconsin _____.

STATE OF WISCONSIN

DEPARTMENT OF NATURAL RESOURCES

BY _____

Preston D. Cole, Secretary

(SEAL)