Florida Department of Environmental Protection

DRAFT Rule Language for Numeric Nutrient Standards

Bureau of Assessment and Restoration Support

Division of Environmental Assessment and Restoration

Summary of Presentation

- **DEP's Goal for Nutrient Rulemaking**
- **Proposed Concept**
- **Miscellaneous Notes**
- **DRAFT Rule Language**
  - **Chapter 62-302 (Surface Water Quality Standards)**
  - **Chapter 62-302 (Impaired Waters Rule)**
- **What's Next?**

DEP's Goal for Nutrient Rulemaking

- **Big Picture: Manage nutrients in surface (and groundwater) at loadings or concentrations that result in protection and maintenance of healthy, well-balanced aquatic communities**
- **Draft rules written to implement concept presented at first round of workshops**

Rule 62-302.530 (47)(b), FAC

- **Proposed rulemaking concept implements the portion of the narrative nutrient criteria related to imbalance**
- **Rule 62-302.530 (47)(b), FAC, states**
  - **"in no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna."**

Summary of Proposed Concept

- **DEP intends to maintain the narrative nutrient criterion and numerically interpret it using best available information on a site-specific basis using a systematic, hierarchical approach**

Hierarchy for Site Specific Interpretations

Nutrient TMDLs, SSACs, and WQBELs

↓

Cause and Effect Relationships (Lakes & Springs)

↓

Reference-based thresholds combined with biological data to confirm impairment

↓

Narrative (Wetlands, high color lakes, intermittent streams)

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Potential Use of Reference Values

		Biology (1)	
		Healthy	Not Healthy
Nutrients	Meet Threshold	Attains narrative nutrient criteria. A	Does not attain Aquatic Life Use Support. Attains narrative nutrient criteria unless stressor ID links adverse effects to nutrients. C
	Exceed Threshold	Attains narrative nutrient criteria. B	Does not attain narrative nutrient criteria unless stressor ID shows nutrients are not causative pollutant. D

(1) If biological data are not available, but nutrient thresholds are met, water attains narrative nutrient criteria. If biological data are not available, but nutrient threshold exceeded, water placed on "study list".

Miscellaneous Notes

- **Presentation summarizes substantive changes**
  - **NOT all changes**
- **Changes shown using strike-through (delete) and underline (add)**
  - **Added yellow highlighting to draw attention**
- **Used blue highlighting for comments**
- **Presentation paraphrases rule text in most cases**
  - **More "plain speak" than rule language**

Revisions to Chapter 62-302

Surface Water Quality Standards

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Revisions to Rule 62-302.200 (Definitions)

- **Added definition for "Biological health assessment" (BHA)**

  (4) "Biological health assessment" shall mean one of the following aquatic community-based biological evaluations: Stream Condition Index (SCI), Lake Vegetation Index (LVI), or Shannon-Weaver Diversity Index.

- **Used to demonstrate a waterbody is healthy, relative to the narrative nutrient standard**
  - **Does not include "BioRecon," which is still used as a screening tool but not sufficient for health assessment**

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Revisions to Rule 62-302.200 (Definitions)

- **Added definition for "Intermittent stream"**

  (16) "Intermittent stream" shall mean that portion of a stream that does not flow sufficiently in years with average climatic and hydrologic conditions to conduct two temporally-independent SCIs, as described in *Sampling and Use of the Stream Condition Index (SCI) for Assessing Flowing Waters: A Primer* (DEP/EA/002/07), which is incorporated by reference herein. Copies…

- **Reference-based stream thresholds do not apply to intermittent streams because only perennial streams were used to establish thresholds**

Revisions to Rule 62-302.200 (Definitions)

- **Added definition for "Lake"**

  (17) "Lake" shall mean a freshwater waterbody with a minimum of two acres of contiguous open water that is free from emergent vegetation. Aquatic or floating vegetation may be present in the open water. Lakes include ponds, reservoirs, impoundments, and other similar waterbody types, but do not include springs, streams, or wetlands.

  - **Size limit used to distinguish lakes from wetlands, consistent with long-standing ERP guidance**
  - **Stream definition excludes "lake-like" portions of streams based on residence time, width and taxa**

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Revisions to Rule 62-302.200 (Definitions)

- **Added definition for "Lake Vegetation Index"**

  (18) "Lake Vegetation Index (LVI)" shall mean a biological health assessment that measures lake health in predominantly freshwaters using aquatic plants, performed and calculated using the methodologies, dated 03-31-08, in DEP-SOP-002/01 LT 7500, DEP-SOP-002/01 LQ 7300 and DEP-SOP-001/01 FS 7220, which are incorporated by reference herein. Copies…

- **Used to assess if a lake is healthy and vascular plant community meets narrative nutrient criterion**

Revisions to Rule 62-302.200 (Definitions)

- **Added definitions for "Nutrient" and "Nutrient response variable"**

  (23) "Nutrient" shall mean total nitrogen (TN), total phosphorus (TP) or their organic or inorganic forms.

  (24) "Nutrient response variable" shall mean a biological variable, such as chlorophyll a, biomass, or structure of the phytoplankton, periphyton or vascular plant community, that responds to nutrient load or concentration in a predictable and measurable manner

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Revisions to Rule 62-302.200 (Definitions)

- **Added definition for "Nutrient Watershed Region"**

  (25) "Nutrient Watershed Region" shall be as defined by EPA on pages 75805 and 75806 in Volume 75, Number 233 of the Federal Register, as published on December 6, 2010, which are incorporated by reference. Copies of pages 75805 and 75806 may be obtained from ….

- **As mentioned at first workshops, we are using EPA's numbers for stream thresholds, and as such, are using their regions too**
  - **Both are slightly different than ours**

Revisions to Rule 62-302.200 (Definitions)

- **Added definition for "Spring vent"**

  (35) "Spring vent" shall mean a location where groundwater flows through a natural opening in the ground onto the land surface or into a surface water.

- **As is the case for EPA's springs criteria, thresholds only apply at spring vent**
  - **Stream thresholds apply in spring run**

Revisions to Rule 62-302.200 (Definitions)

- **Added definition for "Stream"**

  (36) "Stream" shall mean a flowing, predominantly fresh surface water in a defined channel with banks, and includes rivers, creeks, branches, canals, spring runs, and other similar water bodies. Streams flow during average climatic and hydrologic conditions and do not include intermittent streams, wetlands, or portions of streams that exhibit lake characteristics (e.g., long water residence time, increased width, and predominance of lentic biological taxa).

- **Includes canals outside of South Florida**

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Revisions to Rule 62-302.200 (Definitions)

- **Added definition for "Stream Condition Index"**

  (37) "Stream Condition Index (SCI)" shall mean a biological health assessment that measures stream health in predominantly freshwaters using benthic macroinvertebrates, performed and calculated using the methodologies, dated 03-31-08, in DEP-SOP-002/01 LT 7200, DEP-SOP-002/01 LQ 7400 and DEP-SOP-001/01 FS 7420, which are incorporated by reference herein. Copies … For water quality standards purposes, the Stream Condition Index shall not apply in the South Florida Nutrient Watershed Region.

- **Used to assess if a stream is healthy and therefore meets narrative nutrient criterion**

Revisions to Rule 62-302.200 (Definitions)

- **Revised definition of "Water quality standards"**
  - **In Florida, "standards" include designated uses, criteria, antidegradation policy, AND moderating provisions**
  - **Clarified that "moderating provisions" include Site Specific Alternative Criteria, variances, mixing zones, and exemptions**

Revisions to Rule 62-302.530 (Table)

- **Revised the text preceding the table of surface water quality criteria to specifically state that criteria can be expressed as spatial averages**
  - **Added "Numeric interpretations of the narrative nutrient criterion (paragraph 62-302.530 (47)(b), F.A.C.) shall be expressed as spatial averages and applied over a spatial area consistent with their derivation."**
  - **Spatial component also addressed in Rule 62-302.531, but wanted to make it clear**

New Rule 62-302.531

- **Main new section - provides numeric interpretations of the narrative nutrient criteria**
  - **Subsection (1) simply reiterates that the narrative criteria applies to all Class I, II and III waters**
  - **Subsection (2) provides hierarchy and numeric thresholds for lakes, springs and streams**
  - **Subsections (3) – (7) are miscellaneous topics**

New Rule 62-302.531 (2)(a)

- **Paragraph (a) establishes top (primary) tier of the hierarchy (site specific interpretations), and notes**
  - **If multiple interpretations, most recent applies**
  - **TN and TP interpreted separately**
- **Site specific interpretations include:**
  - **TMDLs for nutrients, nutrient response variables, AND for DO if written to prevent imbalance**
  - **SSACs, and**
  - **Other interpretations formally established by rule or final order by the Department (WQBELs)**

New Rule 62-302.531 (2)(b)

- **Paragraph (b) establishes second tier of the hierarchy (cause-and-effect relationships), and provides thresholds for lakes (sub-paragraph 1.) and springs (sub-paragraph 2.) if there are no site specific interpretations**

New Rule 62-302.531 (2)(b)1. (Lakes)

- **Lakes thresholds provided in subparagraph 1.**
  - **Same numbers as promulgated by EPA and same expression (annual geometric mean, not to be exceeded more than once in a 3-year period)**

Long Term Average Lake Color and Alkalinity	Chlorophyll *a*	Total Phosphorus	Total Nitrogen
> 40 and ≤ 140 Platinum Cobalt Units	20 µg/L	0.05 mg/L	1.27 mg/L
≤ 40 Platinum Cobalt Units and > 20 mg/L $CaCO_3$	20 µg/L	0.03 mg/L	1.05 mg/L
≤ 40 Platinum Cobalt Units and < 20 mg/L $CaCO_3$	6 µg/L	0.01 mg/L	0.51 mg/L

New Rule 62-302.531 (2)(b)1. (Lakes)

- **But, there are differences in application**
  - **Similar categories, based on color and alkalinity, but table only goes up to a color of 140 pcu**
    - **Narrative continues to apply if color > 140, or if insufficient data to determine color or alkalinity**
  - **Specifies that color assessed as true color, and that color and alkalinity are the long-term average**
    - **Based on a minimum of ten data points over at least three years with at least one data point in each year**
    - **Allows use of specific conductance data if alkalinity not available**

New Rule 62-302.531 (2)(b)1. (Lakes)

- **Application of "modified" thresholds different**
  - **EPA set modified criteria for TN & TP for baseline period in which chl *a* criteria met all 3 years**
  - **We propose to assess annually and apply modified thresholds for TN and TP in any year that meets chl *a* threshold, in which case the TN and TP thresholds change to the annual geometric mean values of ambient samples, subject to the upper and lower limits in table b.**
    - **Must be sufficient chl *a* data to calculate annual mean (see subsection 5)**

New Rule 62-302.531 (2)(b)1. (Lakes)

- **Allowable range of "modified criteria"**

Long Term Average Lake Color and Alkalinity	Minimum calculated numeric interpretation		Maximum calculated numeric interpretation	
	Total Phosphorus	Total Nitrogen	Total Phosphorus	Total Nitrogen
> 40 and ≤ 140 Platinum Cobalt Units	0.05 mg/L	1.27 mg/L	0.16 mg/L	2.23 mg/L
≤ 40 Platinum Cobalt Units and > 20 mg/L $CaCO_3$	0.03 mg/L	1.05 mg/L	0.09 mg/L	1.91 mg/L
≤ 40 Platinum Cobalt Units and < 20 mg/L $CaCO_3$	0.01 mg/L	0.51 mg/L	0.03 mg/L	0.93 mg/L

New Rule 62-302.531 (2)(b)1. (Lakes)

- **As noted in DRAFT rule, we are still evaluating available lake data and may propose region-specific thresholds, including chlorophyll a targets, for Central Florida and other regions with naturally higher nutrients in soils**

New Rule 62-302.531 (2)(b)2. (Spring vents)

- **Numeric thresholds for spring vents fairly straightforward**
  - **Same number as EPA – 0.35 mg/L of Nitrate-nitrite**
  - **Same expression – annual geometric mean not to be exceeded more than once in a 3-year calendar period**

New Rule 62-302.531 (2)(b)2. (Streams)

- **Numeric interpretation of narrative for streams provided in subparagraph 3.**
  - **Same numbers as promulgated by EPA and same expression (annual geometric mean, not to be exceeded more than once in a 3-year period)**
- **But, as was the case for lakes, the thresholds are implemented differently**
  - **Biggest difference is that they are ONLY used in combination with biological information**

New Rule 62-302.531 (2)(b)2. (Streams)

- **Narrative achieved if the nutrient impairment provisions of subsections 62-303.450(1) and (2), F.A.C., are not being exceeded and:**

  1. The average SCI score is 40 or higher for the two most recent temporally independent SCI evaluations; or

  2. The nutrient thresholds are attained

  - **Unless the average SCI score is < 40 for the two most recent temporally independent SCI evaluations, and**
  - **A stressor identification study links the adverse biological effects to nutrients**

New Rule 62-302.531 (2)(b)2. (Streams)

- **Subsections 62-303.450(1) and (2), are the floral nutrient thresholds for the verified list in the IWR**
  - **Subsection 62-303.450(1) references the 20 ug/L chl a impairment threshold for the PL, but uses more recent data and allows for site-specific listing thresholds**
  - **Subsection 62-303.450(2) references part of the PL that allows listing due to "other information"**
    - **"…algal mats are present in sufficient quantities to poise a nuisance or hinder reproduction of threatened or endangered species"**
    - **But DEP must verify imbalance**

New Rule 62-302.531 (2)(b)2. (Streams)

- **Stream nutrient thresholds are provided in table**

Nutrient Watershed Region	Reference-based Total Phosphorus[1]	Reference-based Total Nitrogen[1]
Panhandle West	0.06 mg/L	0.67 mg/L
Panhandle East	0.18 mg/L	1.03 mg/L
North Central	0.30 mg/L	1.87 mg/L
Peninsular	0.12 mg/L	1.54 mg/L
West Central	0.49 mg/L	1.65 mg/L
South Florida	No numeric interpretation. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric interpretation. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

New Rule 62-302.531 (2)(b)2. (Streams)

- **During first workshops, we described the combination of thresholds and bioassessment info as having four main assessment outcomes**
- **However, we streamlined rule language, resulting in only two, somewhat more complex outcomes**
  - **Additional outcomes described in the IWR**
- **Also provided alternative language that more closely tracks the outcomes described in the framework document, and would like feedback**
  - **Should mean the same, but which is clearest?**

New Rule 62-302.531 (3) (Chlorophyll a data)

- **Subsection (3) states that <u>new</u> chl *a* data must be**
  - **Assessed using specific analytical methods as stipulated in the DEP document titled "Applicability of Chlorophyll *a* Methods" (DEP/SAS/003/09)**
    - **Spectrophotometric, fluorometric, or High Performance Liquid Chromatography**
  - **Be corrected for or free from the interference of phaeophytin ("corrected" chlorophyll a)**

New Rule 62-302.531 (4) (Downstream Protection)

- **Subsection (4) provides for downstream protection using narrative, rather than DPVs**

  (4) In no case shall the loading of nutrients from a Class I, Class II, Class III, or Class III-Limited waterbody cause or contribute to an exceedance of water quality standards in a downstream waterbody.

- **DEP will conduct site-specific analyses to ensure downstream protection as part of permitting process**

New Rule 62-302.531 (5) (Temporal Independence)

- **Subsection (5) provides definition for "temporally independent" for biological health assessment data**
  - **Must be at least 3 months apart**
  - **If less than 3 months apart, use mean value**

New Rule 62-302.531 (6) (Data Requirements)

- **Subsection (6) provides minimum data requirements to calculate annual geo mean**
  - **Must be at least 4 temporally independent samples per year**
  - **With at least one sample taken between May 1 and September 30 and at least one sample taken during the other months of the calendar year**
  - **To be treated as temporally-independent, samples must be taken at least one week apart**

New Rule 62-302.531 (7) (Spatial Extent)

- **Subsection (7) clarifies that numeric thresholds are applied over a spatial area consistent with derivation of the numeric interpretation**
  - **If based on a TMDL or SSAC, the spatial application is as defined in the TMDL document or SSAC rule**
  - **For lakes, applied as a lake-wide average**
  - **For spring vents, applied at or above the spring vent**
  - **For streams, determined by relative system homogeneity and applied to waterbody segments or aggregations of segments as determined by the site-specific considerations**

New Rule 62-302.531 (8) (Expression as Load)

- **Subsection (8) clarifies that load-based nutrient TMDLs do not need to be converted into concentrations to be used as the basis for the numeric interpretation of the narrative criterion**
  - **Maintains expression adopted by rule, when TMDL was adopted**
- **40 CFR 131.3(b) defines criteria as**
  - ***Criteria* are elements of State water quality standards, expressed as constituent concentrations, levels, or narrative statements, representing a quality of water that supports a particular use.**

New Rule 62-302.800(2)(d) (Type II SSACs)

- **Paragraph (d) lists parameters that are not eligible for Type II SSACs**
  - **Type II SSACs allow for use of**

    "…generally accepted scientific method or procedure to demonstrate with equal assurance that the alternative criterion will protect the aquatic life designated use of the water body"
- **Deleted nutrients, which makes them eligible**
  - **Also added specific citations for each criteria**

New Rule 62-302.800(3) (Type III SSACs)

- **Drafted new subsection creating Type III SSAC, which is specific to nutrients**
- **Language very similar to what was proposed in summer 2009**
- **Follows same administrative process as Type I SSAC**
  - **Must demonstrate that proposed alternative criteria are fully protective of the designated use**
  - **Must provide public notice and an opportunity for public hearing before adopting by Order**

New Rule 62-302.800(3) (Type III SSACs)

- **Paragraph (a) lists <u>three</u> conditions that must be met**
  1. **Must demonstrate that waterbody fully supports the propagation and maintenance of a healthy, well-balanced population of fish and wildlife using biological health assessments (BHA) at two spatially-independent stations representative of the waterbody**
  2. **Must provide sufficient data to characterize existing water quality, including temporal variability**

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New Rule 62-302.800(3) (Type III SSACs)

3. **And one of the following**
   - a) **Downstream waters attain water quality standards related to nutrient conditions, pursuant to IWR, or**
   - b) **The nutrients delivered by the waterbody meet the allocations of a downstream TMDL, or**
   - c) **Nutrients delivered by the waterbody demonstrated to not cause or contribute to nonattainment of WQS pursuant to IWR**
     - **Demonstration based on scientifically-defensible evidence, such as information on excess algal growth, nuisance aquatic plant coverage, or other phytoplankton, periphyton, and vascular plant community responses**

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New Rule 62-302.800(3) (Type III SSACs)

- **Regarding 1., Biological health assessments must**
  - **Comply with the quality assurance requirements of Chapter 62-160, F.A.C.**
    - **Including adherence to "Primers" for SCI and LVI, which were incorporated by reference in definitions**
  - **Be conducted during the water quality sampling period described in subparagraph 62-302.800(3)(a)2 ., and**
  - **Be a minimum of two assessments per station, with at least 1 assessment conducted during the final year**

New Rule 62-302.800(3) (Type III SSACs)

- **Regarding 2., rule provides example data set**
  - **Water quality data collected at the biological monitoring stations every other month over a three year period**
- **Also notes that water quality data collected during extreme hydrologic conditions should be excluded from the analysis**
  - **Flood and drought events that recur less than once in a twenty-five year period**
  - **Helps address representativeness**

New Rule 62-302.800(3) (Type III SSACs)

- **Paragraph (b) describes how SSAC values would be calculated**
  - **"The Type III SSAC shall be established at a level representative of nutrient concentrations that have been demonstrated to be protective of the designated use, while taking into account natural variability by using statistical methods appropriate to the data set."**
- **Considered option of providing a specific statistical method, but want to maintain flexibility**

New Rule 62-302.800(4) (Type III SSACs)

- **Subsection (4) describes how BHAs are used to demonstrate full support of propagation and maintenance of a healthy, well-balanced population of fish and wildlife**
  - **Fully supported when average of the two most recent temporally independent SCI scores or LVI scores at the same location are 40 or above (SCI) or 46 or above (LVI)**
  - **To qualify as temporally independent samples, must be conducted at least three months apart**
  - **If collected < three months apart, use mean value**

Other Topics That May be Added

- **May Add Numeric Thresholds for Estuaries**
  - **Several major estuaries (LSJR, IRL, St. Lucie, Caloosahatchee, and Tampa Bay) already addressed via TMDLs and WQBELs**
- **May add section for "Implementation" that would point readers to appropriate Chapters**
  - **For development of WQBELs, would refer to Chapter 62-650**
  - **For 303(d) assessment of waters, would refer to Chapter 62-303**

Revisions to Chapter 62-303

Identification of Impaired Surface Waters (Impaired Waters Rule)

Revisions to Rule 62-303.150 (Study List)

- **Rule previously described relationship between planning and verified lists**
  - **Planning List - list of potentially impaired waters, which will be monitored to determine if impaired**
  - **Verified List - list of impaired waters, for which TMDLs will be developed, which will be adopted by Secretarial Order & submitted to EPA as 303(d) list**
- **New text describes how "Study List" fits in**
  - **Study List is list of waters identified as impaired, but we do not know the causative pollutant**
  - **DEP will study further to identify cause**

Revisions to Rule 62-303.200 (Definitions)

- **Revised definition of "bioassessment" to "biological health assessment"**
  - **Same as definition in Chapter 62-302**
  - **Dropped "BioRecon" and added "Shannon-Weaver Diversity Index"**
- **Revised definition of "BioRecon" to update the reference for methodology and provide info on how to obtain copies**
  - **Still used to assess biological health of systems, but only used to identify potential impairment**

Revisions to Rule 62-303.200 (Definitions)

- **Revised definition of "Clean techniques" to provide info on how to obtain copies**
- **Added definition for "Intermittent Streams"**
  - **Same as Chapter 62-302**
- **Added definition for "Lake"**
  - **Same as Chapter 62-302**
- **Revised definition for "Lake Vegetation Index" to match Chapter 62-302**

Revisions to Rule 62-303.200 (Definitions)

- **Added definitions for "Nutrient", "Nutrient response variable", "Nutrient Watershed Region", "Predominantly fresh waters", "Shannon-Weaver Diversity Index" and "Spring Vent"**
  - **Same as Chapter 62-302**
- **Revised definitions for "Stream" and "Stream Condition Index" to match Chapter 62-302**

Revisions to Rule 62-303.200 (Definitions)

- **Added definition for "Study List"**

(31) "Study list" shall mean the list of surface waters or segments, as identified in Rule 62-303.390 F.A.C., that do not attain surface water quality standards, but the cause of nonattainment is unknown and require further study to identify the cause of nonattainment.

Revisions to Rule 62-303.200 (Definitions)

- **Deleted definition for "Trophic State Index"**
  - **No longer used as nutrient impairment threshold**
- **Revised definition for "Water quality standards"**
  - **Same as Chapter 62-302**

Revisions to Rule 62-303.330 (PL Bio Assessment)

- **Did not make substantive changes to (1)**
  - **Referenced sections in Rule 62-303.320 relate to age limitation of data (10 years) and QA requirements**
- **Revised subsection (2) to use "Biological health assessments" (BHA), which include SCI, LVI, and Shannon-Weaver, but NOT BioRecon**
  - **BioRecon can be used, but did not include as BHA**
  - **Entities conducting BHAs must follow "primers", take at least 8 hours of training, and pass audit**

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Revisions to Rule 62-303.330 (PL Bio Assessment)

- **Revised (3), which describes waters to be listed on planning list based on biological data**
  - **At least one failure of the Shannon-Weaver Diversity Index**
  - **One of the two most recent SCI scores is < 40, or there is a 20 point reduction from the historic maximum value if the historic max value SCI is above 64**
  - **One of the two most recent BioRecon scores is ≤ 4**
  - **One of the two most recent LVI scores is < 46, or there is a 20 point reduction from the historic maximum value if the historic maximum value LVI is above 78**

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Revisions to Rule 62-303.330 (PL Bio Assessment)

- **In subsection (3), also deleted 2 provisions that defined "failure" of a bioassessment**
  - **Was "Poor" or "Very Poor" for SCI and LVI, and "Fail" for BioRecon**
  - **No longer need to use these terms as rule now provides specific numeric threshold for each method**

Revisions to Rule 62-303.350 (Nutrient Assessment)

- **Subsection (1) revised to state that the numeric interpretations of the narrative nutrient criterion established in Chapter 62-302 for lakes, springs and streams, and annual mean chlorophyll a values are the primary means for assessing whether a water should be assessed further for nutrient impairment**
  - **Numeric interpretations replaced Trophic State Index for lakes**

Revisions to Rule 62-303.350 (Nutrient Assessment)

- **In subsection (2), revised paragraph (b) so that data requirements for calculation of annual geometric means are consistent with Chapter 62-302**
  - **To calculate an annual geometric mean, need at least four temporally-independent samples per year, with at least one sample collected between May 1 and September 30 and at least one sample collected during the other months of the calendar year**
  - **To be treated as temporally-independent, samples must be collected at least one week apart**

Revisions to Rule 62-303.350 (Nutrient Assessment)

- **Also in subsection (2),**
  - **Deleted all provisions related to TSI**
  - **Revised paragraph 3 to clarify that <u>new</u> chl *a* data must be**
    - **Assessed using specific analytical methods as stipulated in the DEP document titled "Applicability of Chlorophyll *a* Methods" (DEP/SAS/003/09)**
    - **Be corrected for or free from the interference of phaeophytin ("corrected" chlorophyll a)**
- **Makes IWR consistent with Chapter 62-302**

Revisions to Rule 62-303.351 (Streams Assessment)

- **Revised which streams placed on planning list**
- **Streams will be listed if:**
  1) **The numeric interpretation of the narrative nutrient criterion in subsection 62-302.531(2), F.A.C., is exceeded (both numeric thresholds and biology)**
  2) **The reference-based thresholds are exceeded and there are insufficient biological health assessment data available**
  3) **Algal mats are present in sufficient quantities to pose a nuisance or hinder reproduction of a threatened or endangered species, or**

Revisions to Rule 62-303.351 (Streams Assessment)

- **Streams will be listed if:**
  - **4) Annual geometric mean chlorophyll a concentrations are greater than 20 ug/l, or**
  - **5) For waters without a site-specific interpretation, there is a statistically significant increasing trend at the 95% confidence level in TN, TP or chlorophyll a over the planning period using a Mann's one-sided, upper-tail test for trend, as described in Nonparametric Statistical Methods by M. Hollander and D. Wolfe (1999 ed.), pages 376 and 724**
    - **Same statistical test used previously for trends in TSI**

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Revisions to Rule 62-303.352 (Lakes Assessment)

- **Revised which lakes placed on planning list**
- **Lakes will be listed if:**
  - **(1) The numeric interpretation of the narrative nutrient criterion in subsection 62-302.531(2) is exceeded;**
  - **(2) Algal blooms are present in sufficient quantities to pose a nuisance or hinder reproduction of a threatened or endangered species; or**
  - **(3) For waters without a site-specific interpretation, there is a statistically significant increasing trend at the 95% confidence level in TN, TP, or chlorophyll *a* over the planning period using Mann's one-sided, upper-tail test for trend**

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Revisions to Rule 62-303.353 (Estuaries Assessment)

- **Revised which estuaries placed on planning list**
- **Still listed if an annual mean chlorophyll a exceeds 11 ug/L, but changed trend component to match streams and lakes**
  - **For waters without a site-specific interpretation, there is a statistically significant increasing trend at the 95% confidence level in TN, TP, or chlorophyll a over the planning period using a Mann's one-sided, upper-tail test for trend**

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Revisions to Rule 62-303.354 (Spring Vents)

- **Added new section to implement new Nitrate-nitrite numeric threshold for spring vents**
- **Spring vents listed if:**
  - (1) **The numeric interpretation of the narrative nutrient criterion in subsection 62-302.531(2) is exceeded;**
  - (2) **Algal blooms are present in sufficient quantities to pose a nuisance or hinder reproduction of a threatened or endangered species; or**
  - (3) **For waters without a site-specific interpretation, there is a statistically significant increasing trend at the 95% confidence level in Nitrate-nitrite over the planning period using a Mann's one-sided, upper-tail test for trend**

New Rule 62-303.390 (Study List)

- **Added new rule for the Study List**
- **Subsection (1) describes Study List**
  - **Waters that do not attain standards, but we do not know the causative pollutant**
    - **Potential causes include excess pollutant loading or concentrations, habitat or hydrologic alterations, or natural conditions**
  - **Waters on the Study List will be submitted to EPA as water quality limited segments [303(d) List]**

New Rule 62-303.390 (Study List)

- **Subsection (2) describes which waters will be added to Study List**

  a) For waters with a statistically-significant increasing trend in TN, TP, nitrate-nitrite, or chlorophyll *a*, the Department confirms the trend after controlling for confounding variables, such as climatic and hydrologic cycles, seasonality, quality assurance issues, and changes in analytical methods or method detection limits, or

  b) A waterbody does not achieve the biological health assessment provisions in Rule 62-303.330, F.A.C., but a causative pollutant has not been identified

New Rule 62-303.390 (Study List)

- **Should have also added**

  c) Waters verified as impaired for Dissolved Oxygen but for which the Department has not identified a causative pollutant

- **This concept is already included in Subsection 62-303.710(3)**

New Rule 62-303.390 (Study List)

- **Subsection (3) describes the studies that will be conducted**
  - **For waters that fall under paragraph 62-303.390(2)(b), F.A.C., DEP will conduct a stressor identification study to identify the causative pollutant(s) or other factor(s) responsible for impairment.**
  - **A stressor identification study includes collection and analysis of physical, chemical, and biological data necessary to determine the causative pollutant(s) or other factor(s) causing impairment**

New Rule 62-303.390 (Study List)

- **Subsection (4) notes the Department's goals for monitoring listed waters**
  - **To collect this additional data as part of its watershed management approach, with the data collected during either the same cycle that the water is initially listed on the study list or during the subsequent cycle**
  - **Is a 5-year cycle**

Revisions to Rule 62-303.420 (Naturally Low DO)

- **Revised paragraph (1)(b), which deals with cases where the Department has information suggesting low DO values are natural**
  - **Revised text dealing with bioassessment methods used to demonstrate the waterbody supports the protection and maintenance of a healthy, well-balanced population of fish and wildlife**
  - **Demonstrates healthy, rather than "natural"**
  - **Uses same Biological Health Assessments (SCI, LIV, and Shannon-Weaver) as described previously**

Revisions to Rule 62-303.420 (Naturally Low DO)

- **Consistent with requirements in Chapter 62-302**
  - **Requires two or more temporally independent BHAs**
  - **To qualify as temporally independent samples, each BHA must be conducted at least three months apart**
  - **BHAs collected at the same water segment less than three months apart are considered to be one sample, with the mean value used**
- **Also describes where/when BHAs conducted**
  - **In same segment or adjacent downstream segment where the water quality samples were taken**
  - **Same day or after the water quality samples**

Revisions to Rule 62-303.430 (Bio Impairment)

- **Similar to changes for Planning List, revised subsection (1) to refer to Biological Health Assessments (BHAs)**
  - **Must follow QA Rule, SOPs, and "Primers" for SCI and LVI**
- **Added important text noting that**
  - **If BHA conducted during conditions inconsistent with the applicable primer (insufficient flow, for example), results must be excluded from the assessment**

Revisions to Rule 62-303.430 (Bio Impairment)

- **Revised subsection (2) such that waters listed on verified list for biological impairment if**
  - a. **The average of the two most recent independent BHAs are below 40 (SCI) or 46 (LVI).**
  - b. **The average of the two most recent independent SCI scores are 20 or more points below the historic maximum value if the historic maximum value SCI is above 64**
  - c. **The average of the two most recent independent LVI scores are 20 or more points below the historic maximum value if the historic maximum value LVI is above 78**
  - d. **There are two exceedances of the Shannon-Weaver Diversity Index**

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Revisions to Rule 62-303.430 (Bio Impairment)

- **Subsection (3) addresses cases where waters listed on Planning List using BioRecon or "other information"**
  - **If listed based on BioRecon data, will conduct two or more temporally independent SCIs**
  - **If listed based on other information, will conduct two or more temporally independent BHAs appropriate for the waterbody type**
    - **Since no adopted BHAs for estuaries, rule notes that DEP will consider other scientifically credible biological health assessment methods in predominantly marine waters**

Revisions to Rule 62-303.430 (Bio Impairment)

- **Subsection (4) addresses cases where waters listed on planning list using Shannon-Weaver Diversity Index**
  - **Will conduct a minimum of two BHAs to verify whether the water is impaired**
  - **However, if an SCI or LVI is not applicable for the waterbody type, then the biological health assessments shall be the Shannon-Weaver Diversity Index or other scientifically credible method**

Revisions to Rule 62-303.430 (Bio Impairment)

- **Subsection (5) includes requirement to identify causative pollutant to put on verified list**
- **Revised to incorporate numeric nutrient thresholds**
  - **If the numeric interpretation of the narrative nutrient criterion is exceeded, then nutrients will be identified as the causative pollutant unless a stressor identification study links the adverse biological effects to causal factor(s) other than nutrients**

Revisions to Rule 62-303.430 (Bio Impairment)

- **New subsection (6) states that waterbodies will be listed on the Study List if they are verified as biologically impaired, but a causative pollutant has not been identified**
  - **Consistent with new Rule 62-390**

Revisions to Rule 62-303.450 (Nutrient Impairment)

- **Revised subsection (1) so that it only addresses listings for streams and estuaries based on chlorophyll a thresholds**
  - **Streams – 20 ug/L as annual mean**
  - **Estuaries – 11 ug/L as annual mean**
- **Still allows for site-specific thresholds**
- **Different from planning list in that**
  - **Uses data from last 7.5 years, rather than 10 years**
  - **Listed if exceed threshold more than once in 3-year period, rather than in any year**

Revisions to Rule 62-303.450 (Nutrient Impairment)

- **Revised subsection (2), which addresses waters on planning list due to "other information"**
  - **Now also picks up waters on study list**
  - **Also listings based on algal mats/blooms**
    - **62-303.351(3) – algal mats in streams**
    - **62-303.352(2) – algal blooms in lakes**
    - **62-303.354(2) – algal mats in springs (note typo)**
- **As previously required, DEP must verify the imbalance before placing the water on the VL**

Revisions to Rule 62-303.450 (Nutrient Impairment)

- **New subsection (3) addresses waters on PL due to numeric nutrient thresholds that interpret narrative nutrient criterion**
  - **62-303.351(1) – stream thresholds, with biological validation**
  - **62-303.352(1) – lake nutrient thresholds**
  - **62-303.354(1) – springs nutrient thresholds**
- **Listed on VL if exceed thresholds using data from last 7.5 years**

Revisions to Rule 62-303.450 (Nutrient Impairment)

- **New subsection (4) addresses waters on study list due to increasing trend in nutrients or chl *a***
  - **To get on PL, identify statistically significant trend**
  - **To get on SL, identify statistically significant trend, after controlling for confounding factors**
  - **To get on VL, identify there is a substantial risk of nonattainment of narrative within 10 years**
    - **Requires DEP to analyze magnitude and environmental relevance of the trend**

Revisions to Rule 62-303.450 (Nutrient Impairment)

- **Revised subsection (5), which notes that DEP is not required to use nutrient impairment thresholds during development of wasteload allocations or TMDLs**
  - **Revised rule to list specific nutrient impairment thresholds, rather than all**
    - **62-303.351(4) – 20 ug/L chlorophyll in streams**
    - **62-303.353 – 11 ug/L chlorophyll in estuaries**

Revisions to Rule 62-303.710 (Miscellaneous)

- **As mentioned previously, we revised subsection (3) such that waters verified to not attain the DO will be added to the Study List if we cannot identify the causative pollutant**

Revisions to Rule 62-303.720 (Delisting)

- **Relatively few changes to delisting provisions**
  - **Key provision for nutrients is in (2)(j), and it did not need to be changed**

(j) For waters listed based on nutrient impairment, the water shall be delisted if it does not meet the listing thresholds in Rule 62-303.450, F.A.C., for three consecutive years.

Revisions to Rule 62-303.720 (Delisting)

- **Revised subsection (1), which deals with delisting from the Planning List, such that it now also addresses delisting from Study List**
- **Revised paragraph (2)(b) related to listings for biological impairment to refer to BHAs**
  - **Two most recent BHAs must meet the criteria in subsection 62-302.800(4)**
    - **Must be SCI for streams**
  - **May need to add text for Shannon-Weaver**

What's Next? - Rulemaking Schedule

- **We have not set specific dates yet, but the schedule outlined in our Petition was:**
  - **3rd Public Workshop on Revised Rule – Sept., 2011**
  - **ERC Briefing – November, 2011**
  - **ERC Adoption – January, 2012**
  - **Legislative Ratification – 2012 Legislative Session**