

Florida TMDL Prioritization Process

**Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection**

Revised October 2024

**2600 Blair Stone Road Mail
Station 3000
Tallahassee, FL 32399-2400
<https://floridadep.gov/TMDL>**



Background

The Florida Department of Environmental Protection (DEP) must develop total maximum daily loads (TMDLs) for waterbody segments added to DEP's Verified List of Impaired Waters, as required by the federal Clean Water Act, 33 U.S.C. ss. 1251 *et seq.*, and section 403.067, Florida Statutes. A TMDL establishes the maximum amount of a pollutant that a waterbody can receive without causing water quality standard exceedances. As such, TMDL development is an important step toward restoring the state's waters to fully meet their designated uses established in Rule 62-302.400, Florida Administrative Code (F.A.C.).

Although all impaired waters are required to eventually have a TMDL or an equivalent restoration plan developed, there is a need to prioritize TMDL development. TMDL development requires detailed site-specific analysis that constrains the number of TMDLs that can be produced each year. Additionally, waters vary greatly in the magnitude of their impairments and in the threat that these impairments pose to human and ecological health. Therefore, there is a need to prioritize the order in which waters will receive TMDLs, to best use state resources to address water quality issues. DEP developed a prioritization framework ("TMDL prioritization 2.0") in 2022 that assigns priority levels to impaired waters in terms of TMDL development.

TMDL Prioritization 2.0 describes the process by which TMDLs will be prioritized for development by the state, including the issuing of biennial work plans. This document the method used to select waterbodies for TMDL development during this cycle, the list of waters, and their priority rankings. DEP intends to use the methods described herein to prioritize TMDL development waterbodies for period from 2022 through 2031. New prioritization workplans will be developed every two years with the first being created for the period from 2022 to 2024. Any changes to the prioritization methodology will be documented in updates to this document.

Key prioritization factors under consideration are (1) the waterbody type (e.g., estuary, lake, stream), (2) the parameter causing impairment, (3) the magnitude and/or frequency of water quality criterion exceedance, (4) the ecological significance (e.g., Outstanding Florida Waters, Aquatic Preserves, parks), (5) the needs of disadvantaged and/or underserved communities, and (6) the opportunities for stakeholder-led alternative restoration plans (i.e., reasonable assurance plans [RAPs] and pollutant reduction plans). DEP will additionally seek public input on each draft 2-year plan.

This document will focus primarily on nutrient impairments; however, fecal indicator bacteria (FIB) TMDLs are currently in progress, and this document will outline DEP's approach for continuing to address these kinds of impairments. Stream TMDLs based on rapid periphyton survey (RPS) impairments and stream condition index (SCI) are still pending research before such impairments may be prioritized.

Vision Statement

DEP's approach for developing the prioritization procedures and 2-year works plans is guided by an overall vision to select a set of waters in which TMDLs would be the best tool to address restoration. In other words, these would be waters where TMDLs can most effectively guide the restoration to protect the ecosystems they support and the human communities which rely on them. In carrying out this vision DEP has three main goals:

1. Working with communities and stakeholders to develop alternative restoration plans (i.e., reasonable assurance plans and pollution control plans) in situations when TMDLs are not the best tool to guide restoration and/or when alternative restoration plans provide a faster and more effective route to restoration.
2. Identifying disadvantaged or underserved communities. These are communities that have historically been underrepresented in 303(d) assessments, in the development of TMDLs, and the restoration process. DEP will engage with those communities to identify their water quality concerns and implement solutions under the purview of DEAR's programs.
3. Continuing to build the TMDL program's technical capacity to develop TMDLs for different waterbody types and parameter combinations throughout the 10-year prioritization period, so that DEP can address the stream impairments. For example, the department is still working to develop approaches to develop TMDLs for streams that are impaired using the Rapid Periphyton Survey (RPS).

Structure of the TMDL 2.0 Prioritization

Under TMDL Prioritization 2.0, the department will prioritize impaired waters based both on water quality conditions and logistical considerations inherent in TMDL development. The first step in the process will be to screen for different impairment types to select candidate waters for initial TMDL development (**Figure 1**). DEP plans to use a set of numerical screening criteria to select waters from the Verified List that will be candidates for TMDL development. The screening methodology varies depending on the type of parameter a given water is impaired for. From the candidate list, the DEP will then create a series of 2-year workplans. These workplans include priority waters which will be completed within the 2-year period, as well as a draft list. DEP will actively work on TMDL development for waters on the draft list; however, the department may not complete these TMDLs during the current 2-year period due to modeling complexities, logistical considerations and/or resource limitations.

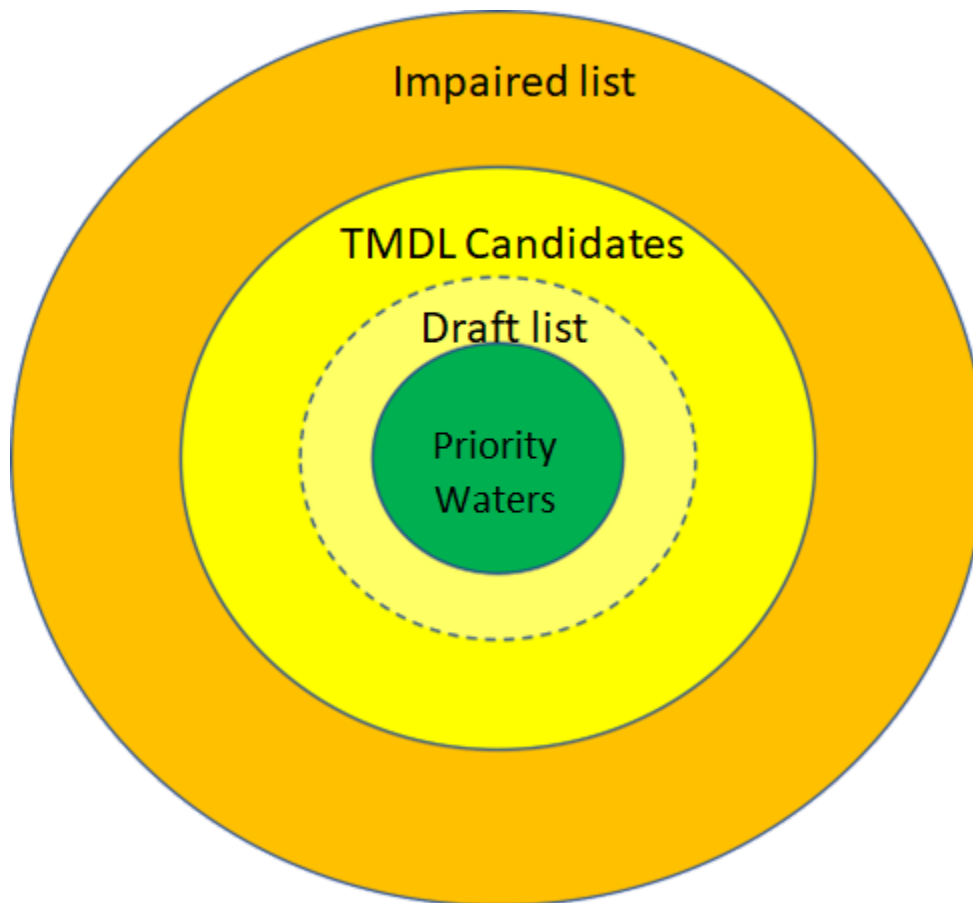


Figure 1. Conceptual TMDL Prioritization approach.

Waters included on the Priority Waters and Draft List will constitute DEP's 2-year workplan for TMDL development. Waters will be re-evaluated every two years. Individual waters will generally move inwards over the course of the 10-year priority plan.

The universe of all waters which can receive TMDLs is comprised of all waters placed in category 5 on the statewide Verified List. These waters are represented in the figure above by the complete circle, extending from the center to the edge. The outer, orange-colored ring contains those impaired waters which do not meet the selection requirements of the inner rings. Each ring moving towards the center meets an additional set of selection criteria. Moving to the inner, nested rings provide a subset of waters where DEP has determined that TMDL development would be the best path to restoration. The yellow and green rings contain these TMDL candidate waters, and this is the subset of waters the department will draw from for TMDL development.

The two yellow rings are TMDL candidates that are not currently on the TMDL priority waters list. The outer, darker yellow ring represents the candidate waters that are not assigned to either the draft list or priority waters lists and for which DEP does not intend to initiate TMDL

development activities during the current 2-year workplan period. The inner, lighter yellow ring contains the subset of TMDL candidate waters that are included on the draft list and for which DEP will initiate TMDL development during the 2-year workplan but may not complete TMDL development within the 2-year period. There are several reasons that a water would be placed on the draft list. The first group includes complex TMDLs that require years of modeling. These will be placed on the draft list once initial model setup work has begun. The second group includes waters, primarily lakes, that DEP may be able to complete in two years, contingent on resources. The third group includes waters where the department is working with stakeholders to develop an alternative restoration plan. Ideally, the stakeholders will succeed in developing their restoration plan, but the department may need to develop a TMDL if the alternative restoration plan effort falls short or if plan development is abandoned.

Waters covered by an alternative restoration plan may be assessed in categories 4b (reasonable assurance plan) or 4e (pollutant reduction plan) and are considered low priorities for TMDL development for the reasons outlined above. Currently, the assessment category 4e plans are in the process of transitioning to assessment category 5r to better align with the methodology used by EPA. However, the way that waterbodies included in this type of plan are prioritized for TMDL development will remain the same.

The last category is the priority waters list that the department intends to complete TMDLs within the 2-year workplan period. These are a subset of the candidate list that meet the additional requisite logistical and workload constraints. This list corresponds with the innermost, green circle in **Figure 1**.

Timing

The TMDL Prioritization 2.0 methodologies were established in 2022 and used to develop the first 2-year workplan for the years 2022 through 2024 (**Table 1**). Subsequent 2-year work plans will be developed following the schedule outlined in **Table 1**. The 2-year schedule aligns with the biennial assessment (BA) of Impaired Waters, which will provide information for re-prioritizing TMDL development every two years. This approach will allow DEP to adaptively remove waters that are no longer impaired, add new impairments to the workplan, receive input from communities on their concerns, and collaborate with stakeholders on alternative restoration plans.

Table 1. Schedule of the TMDL prioritization and 2-year workplans

Year	Biennial Assessment (BA) Cycle	TMDL Prioritization Activity	TMDL 2-Year Work Plan Implementation Period (Years)
2022	2020 – 2022	Develop 10-year Prioritization Process and Establish 1 st 2-Year Workplan	2022 – 2024
2024	2022 – 2024	Set 2 nd 2-Year Workplan	2024 – 2026
2026	2024 – 2026	Set 3 rd 2-Year Workplan	2026 – 2028
2028	2026 – 2028	Set 4 th 2-Year Workplan	2028 – 2030
2030	2028 – 2030	Set 5 th 2-Year Workplan	2030 – 2032

Estuaries

Estuary prioritization begins an evaluation of percent-based estuary nutrient region (ENR) standards by using a reference period approach based on transparency, chlorophyll *a* and dissolved oxygen. ENRs that are assessed based on the percentage of samples exceeding nutrient criteria will not be prioritized at this time because the department is currently evaluating the possibility of assessing these differently.

The first step is to associate sampling stations with ENRs to calculate total nitrogen (TN), total phosphorus (TP) and chlorophyll *a* data for each ENR based on the aggregated stations. These calculations are based upon the assessment type of the ENR, which may be an AGM (annual geometric mean) or AAM (annual arithmetic mean).

Once these numbers are calculated for chlorophyll *a*, TN and TP, a spreadsheet is created that displays whether the ENRs are impaired for chlorophyll *a*, TN or TP. There are additional columns for those ENRs that are above 120% of the standard for each parameter more than once in a three-year period.

Finally, estuaries are assigned numerical priorities, with 1 being highest priority and 3 being the lowest. Priority 1 ENRs are those that exceed their chlorophyll *a* standard by more than 20% more than once in a three-year period. Priority 2 ENRs are those that exceed their TN and/or TP standard by over 20% more than once in a three-year period along with a chlorophyll *a* exceedance. Any ENR with impairments that do not exceed the NNC by 20% is assigned priority rank 3.

Next, considerations based on location, historically under-represented communities and workload are considered. Due to the complexity of estuary models, there is typically a maximum

of one ENR at a time being prioritized for TMDL development. Because DEP does not prioritize waters requiring complex models until work has begun, any estuary TMDL being considered is likely to begin from the draft list of priority waters.

Streams

Stream numeric nutrient criteria (NNC) are more complex than other NNC, incorporate floral and faunal metrics and vary geographically (**Table 2**). For streams, if a site-specific interpretation pursuant to paragraph 62- 302.531(2)(a), F.A.C., (TMDL, site specific alternative criteria (SSAC), Level II water quality based effluent limit (WQBEL), or reasonable assurance plan) has not been established, nutrient thresholds are used to interpret the narrative nutrient criterion in combination with biological information. The narrative nutrient criterion in paragraph 62-302.530(48)(b), F.A.C., shall be interpreted as being achieved in a stream segment if the following conditions are met:

1. There is floral information supporting a determination that there is not an imbalance in flora and fauna in the system. This determination is based on chlorophyll *a* concentrations, the absence or algal mats or blooms, the absence of nuisance macrophyte growth, and a lack of changes in algal species composition that otherwise would indicate an imbalance in flora or fauna.
2. Additionally, there needs to be confirming support from one of two other indicators: either the Stream Condition Index (SCI) or an evaluation of the nutrient thresholds. To meet the SCI requirement, the average score of at least two temporally independent SCIs performed at representative locations and times is 40 or higher, with neither of the two most recent SCI scores less than 35 (i.e., no faunal imbalance). Alternatively, the support can include the nutrient concentration not exceeding their thresholds more than once in a 3-year period.

Table 2. Stream nutrient thresholds for total phosphorus and total nitrogen.

Nutrient Watershed Region	Total Phosphorus Nutrient Threshold¹	Total Nitrogen Nutrient Threshold¹
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
Peninsula	0.12 mg/L	1.54 mg/L
West Central	0.49 mg/L	1.65 mg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(47)(b), F.A.C., applies.

¹These values are annual geometric mean concentrations not to be exceeded more than once in any three-calendar year period.

DEP established the NNC for streams but also acknowledged that the relationships between nutrients and biological responses are highly influenced by site-specific and mitigating factors. In streams, these mitigating factors can include residence time, canopy cover, water velocity, depth, hydrologic modification and habitat condition. Habitat and hydrologic modification are

known to influence biological communities; therefore, DEP has determined that habitat condition and artificial channelization should be initial screening metrics in setting stream TMDL prioritization. Using this methodology will allow DEP to focus on streams that are primarily stressed by nutrients rather than those where habitat or channelization are the dominant contributing factors. Accordingly, DEP will use the Habitat Assessment (HA) and Artificial Channelization sub-score to select candidates and prioritize streams for TMDL development. Streams will be ranked based on available HA and Artificial Channelization scores as shown in **Table 3**. Streams with high HA scores (HA > 80, Artificial Channelization Score > 5), which are indicative of less disturbed stream channels, will be ranked as higher priorities. Streams will be ranked on a 1 to 4 scale with rank 1 being the highest priority and rank 4 being the lowest. Stream rankings of 1 and 2 will be considered candidates. Stream rankings of 3 and 4 will not be initially considered candidates.

Table 3. Stream priorities as affected by HA scores and channelization scores

Stream Ranking	HA Score	Artificial Channelization Score	Notes
4	≤40	N/A	Consider a stream exclusion review.
4	>40–80	≤5	
3	>40–80	>5–10	Consider a stream exclusion review and subsequent stressor identification study.
3	>80–100	≤5	
2	>80–100	>5–10	Evaluate against other considerations.
1	>80–100	>10	Evaluate against other considerations.
1	>100	N/A	

For those streams that have relatively intact habitats as indicated by higher HA scores, additional screening criteria will be applied to select streams to be added to the priority and draft lists. The additional screening criteria include the basis of listing, specifically whether the stream was listed for exceeding floral metrics, or a combination of Stream Condition Index (SCI) and the stream thresholds. Streams with Linear Vegetation Survey (LVS) impairments will not be considered candidates until an empirical relationship between the metric and nutrients is established. Streams with chlorophyll *a* impairments would be considered for TMDL development. For the second phase of the prioritization, only one type of impairment will be considered for TMDL development. Streams that fail chlorophyll *a* and pass RPS and LVS will be considered for H1 TMDL development. The department is working on developing methods to address RPS and SCI impairments via TMDL development but does not expect to begin development during this 2-year prioritization cycle.

Springs

Springs impaired for nitrate-nitrite will be considered for TMDL development. These will be prioritized based on spring magnitude (a measure of discharge from the spring), proximity to ecologically significant waters (OFWs, preserves, and State Parks), and severity of the impairment. All impaired first-magnitude springs on the Outstanding Florida Springs (OFS) list already have adopted TMDLs, as required by Florida statutes.

Lakes

Prioritization of lakes for TMDL development begins with the use of an initial screening of each impaired lake WBID. The first check is for the presence of data, particularly chlorophyll *a*, TN and TP AGMs.

Next, the department counts the number of years of data where there are with AGMs for all three variables (chlorophyll *a*, TN and TP). Only waterbodies with a minimum of five years of AGMs since the year 2008 are considered for TMDL development.

The output of this process was a list of 118 lakes, some of which already have TMDLs, alternative restoration plans, or SSACs in progress. Others were determined to be ineligible for TMDL development because they do not behave as natural systems, e.g., stormwater treatment systems and historic mine pit lakes.

The final screening of lakes for TMDL development was based on expected complexity of the TMDL approach, department resources (workload and expertise), geographic location (closely clustered lakes are sometimes placed into the same document for convenience), magnitude of nutrient impairment and amount of available data. While five years of AGMs is the minimum for TMDL development, more years of data are preferred.

Alternative Restoration Plans

DEP encourages local stakeholders to develop plans at the earliest practical time to restore waters not meeting state water quality standards. The Impaired Waters Rule (IWR) authorizes two types of alternative restoration plans that avoid placement of a waterbody on the Verified list. The optimal time to propose or submit one of these plans is during the assessment cycle and/or before TMDL development. Waterbodies with restoration plans meeting the requirements of rule 62-303.600, F.A.C., (“4b plans” or “Reasonable Assurance Plans”) are not placed on the Verified List or the 303(d) list. Waterbodies with restoration plans only meeting the requirements of Rule 62-303.390(2)(d), F.A.C., (“4e plans”) are placed on the Study List and the 303(d) list. The 4b and 4e restoration plans are often established in a more streamlined manner compared to the process leading to BMAPs because of existing stakeholder support. Waters with approved or accepted 4b or 4e plans for the parameter under consideration will not be considered for TMDL development unless the waterbody is placed back into category 5 for the given parameter.

DEP will consider the status and expected development and implementation schedule for

proposed alternative restoration plans when setting the 2-year priority waters and draft lists. The primary determining factor in this consideration will be whether DEP has a reasonable expectation that the proposed alternative restoration plan will result in water quality restoration sooner than the DEP implemented TMDL route. DEP is considering the inclusion of proposed reasonable assurance (4b) plans on the draft list as a means of providing a more holistic view of restoration efforts. Alternative restoration plans will be considered by DEP for waters on the 2-year year workplan only if the planned restoration activities can be initiated before the TMDL is completed by DEP. It is unlikely that DEP will accept an alternative plan in cases where TMDL development has already been initiated. Waters with existing alternate restoration plans are considered low priority for TMDL development to allow time for implementation of the restoration plan.