

*Clean Waterways Act Technical Advisory Committee  
Summary Report*

**Division of Water Resource Management  
Florida Department of Environmental Protection**

**March 2022**



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## ***Executive Summary***

In 2020, the Florida Legislature passed Senate Bill 712, also known as the Clean Waterways Act (CWA), now Chapter 2020-150, Laws of Florida. This legislation passed with unanimous, bipartisan support and carries a wide range of water quality protection provisions aimed at minimizing the impact of known sources of nutrient pollution and strengthening regulatory requirements. Stormwater related pollution represents one of the largest potential contributors of nutrients throughout the state. The CWA directed the Florida Department of Environmental Protection (DEP) and Florida's Water Management Districts (WMDs) to update stormwater design and operation regulations under Part IV, Chapter 373, Florida Statutes (F.S.), using the latest scientific information.

Public input is an important and valued part of all Florida rule development activities. The formation of a Technical Advisory Committee (TAC) provided DEP and WMDs with an additional way to seek and receive public input and recommendations during the rule development process. This TAC was focused on the stormwater rulemaking direction in the CWA, specifically Section 5, Chapter 2020-150, Laws of Florida, which amended the statutory provisions for the statewide environmental resource permitting (ERP) rules in section 373.4131, F.S. DEP also set up an email box ([Stormwater2020@FloridaDep.gov](mailto:Stormwater2020@FloridaDep.gov)) to provide a forum for the public and interested parties to submit comments regarding the TAC and the proposed rulemaking. Many organizations and members of the public submitted and continue to provide comments. These comments are archived on the TAC's webpage (<https://floridadep.gov/CWA-TAC>) and can be viewed at any time by members of the public.

The mission of this TAC was to provide a forum for identifying and constructively outlining recommendations to DEP and the WMDs for strengthening the stormwater design and operation regulations implemented under Part IV, Chapter 373, F.S., including updates to the Environmental Resource Permit Applicant's Handbook (Applicant's Handbook), based on the most recent scientific information available and the additional directions provided by Section 5, Chapter 2020-150, Laws of Florida.

The goal of the TAC was to develop and provide consensus on stormwater rulemaking recommendations for DEP and the WMDs through public discussion and constructive deliberation. The TAC collaborated during public meetings to produce stormwater recommendations for DEP's consideration during rulemaking. The TAC conducted a total of 13 meetings from Dec. 1, 2020, through

Nov. 2, 2021. These meetings ranged in length from three to four hours. Full recordings and agendas of each meeting can be found on the TAC’s webpage.

The TAC’s initial charge questions were based on legislative direction set forth in the CWA:

- What changes are recommended for improving existing stormwater operation regulations to ensure water resources are protected under the rulemaking directed under the CWA?
- What measures are recommended for consistent application of the net improvement performance standard to ensure significant reductions of any pollutant loadings to a waterbody thought to be impaired by stormwater discharges?
- What are the options for identifying stormwater design criteria and best management practices that are effective for increasing the removal of nutrients from stormwater discharges in the state?

The TAC reached consensus on 33 recommendations and had a split vote on six others. These recommendations are listed in Tables 1 and 2 below.

**Table 1: Summary of Recommendations**

Recommendation	Charge Item
DEP and WMDs will require the necessary staff and funding to implement these recommendations.	1
Require each applicant to provide an Operation & Maintenance (O&M) plan for each stormwater system to be permitted.	1, 3
Incorporate O&M as an attachment to the permit for the future owners.	1
The schedule and frequency of inspections should be listed in the Applicant’s Handbook, Volume I, similar to Table 32.5-1 provided in the 2010 Draft Stormwater Quality Applicant’s Handbook.	1
To the extent practicable, ERP and Municipal Separate Storm Sewer System (MS4) inspection requirements should be consistent and/or complimentary to reduce duplication of inspections and to maintain consistent stormwater maintenance requirements.	1
Inspectors would be required to have an Inspector Certificate but would not require a professional engineer (PE) license.	1
DEP and WMDs should consider a centralized tracking system for stormwater system maintenance and inspections. They should implement it within the next five years.	1

Recommendation	Charge Item
DEP should evaluate a representative subpopulation of Best Management Practice (BMP) types to determine the performance treatment efficiency of installed and operating BMPs.	1
The TAC promoted the use of regional stormwater systems and encouraged language in the rule to help facilitate their use throughout the state.	1
Regional systems should only give credits to projects within the same local watershed or basin, as appropriate.	1
Regulation of reuse water loading impacts should be addressed in state rules.	1
Net improvement requirements should be based on the type of water body the system discharges to, with higher load reduction requirements for impaired and Outstanding Florida Waters (OFWs).	2
Net improvement requirements should be applied to all projects within a watershed of an impaired waterbody, not just projects that directly discharge to an impaired waterbody.	2
<p>Where a total maximum daily load (TMDL) has been adopted, TMDL standards should be used, unless net improvement standards are more stringent, the more stringent standard should be used in this instance.</p> <ul style="list-style-type: none"> <li>• TMDL standards should be applied by reducing the predevelopment loading by the TMDL percent load reduction. There is no expectation that the loading would need to be reduced more than undeveloped/natural conditions.</li> </ul>	2
Areas exempt from net improvement criteria should be based on specific criteria: (e.g. the number of urban versus rural areas or the percentage of impervious area on site versus a minimum total site area.)	2
Net improvement should be evaluated at the cumulative outfall(s) of the system on a mean annual basis.	2
The use of alternative form of compensatory treatment is allowed in the same basin when a site cannot provide the required net improvement.	2
Update rainfall data to the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 data set.	1, 3
Dry detention basins could be kept in the BMP library if accompanied by information identifying its variability and a recommendation that it may need to be used in conjunction with another BMP.	1, 3
Dry detention basins should not be a presumptive BMP listed in the handbooks.	1, 3

Recommendation	Charge Item
The state should develop protective wetland criteria regarding the use of isolated wetlands as a means of stormwater treatment. These criteria should address the quality and size of the wetlands that can be used for stormwater management to ensure that the wetland function is improved by this use and not degraded by it.	1, 3
All technologies in the BMP library would be required to include a maintenance plan or full O&M.	1, 3
The O&M for each technology in the BMP library would dictate a recommended inspection frequency that would be listed in the agency permit.	1, 3
Third-party testing of both proprietary and non-proprietary technology would need to include hydrology and water chemistry/loading. Field testing would also be required to show effectiveness and to test the presumptive criteria.	1, 3
Third-party testing of BMP technology would need to consider the varying rainfall data in Florida as compared to Florida conditions.	1, 3
An application fee for administration of the BMP library should be established by DEP.	1, 3
Low Impact Development (LID) and Green Infrastructure (GI) should be listed in the new BMP technology library. Users should be able to sort LID/GI to locate them easily.	1, 3
DEP would be responsible for reviewing the applications for the BMP library, either utilizing in-house staff or contracted out to another entity.	1, 3
In BMP Library, the library would be in four parts.	1, 3
<ul style="list-style-type: none"> <li>• Reference archive of published academic scientific papers.</li> </ul>	1, 3
<ul style="list-style-type: none"> <li>• BMP technologies of non-proprietary technology that have presumptive criteria from the 2010 Draft Stormwater Quality Applicant’s Handbook and Applicant’s Handbook, Volume IIs with examples of these systems.</li> </ul>	1, 3
<ul style="list-style-type: none"> <li>• BMP technology repository of submitted and accepted third-party tested devices.</li> </ul>	1, 3
<ul style="list-style-type: none"> <li>• BMP technology repository of unaccepted “in progress” submissions that require further verification/review.</li> </ul>	1, 3

**Table 2: Summary of Split Vote Recommendations**

Spilt Vote Recommendation	Votes	Charge Item
Designers should incorporate reclaimed water into loading calculations based on the facility providing the reuse.	For: 6 Against: 4 Unsure: 1	1, 3
For redevelopment occurring outside of an impaired watershed, post-development nutrient loading should be less than the existing nutrient loading.	For: 8 Against: 2	2
Net improvement definition could be used for all development, which would eliminate the need for a redevelopment definition.	For: 8 Against: 2	2
The loading for new development occurring outside of impaired waters should be pre $\geq$ post.	For: 9 Against: 1	2
Set reduced percent criterion for Total Nitrogen (TN) and Total Phosphorus (TP) separately for all development.	For: 7 Against: 2 Unsure: 1	2
In all development, the loading pre $\geq$ post or a set percent load reduction, whichever is more stringent.	For: 2 Against: 4 Unsure: 4	2

**List of TAC Members**

Thirteen members of various interest groups were asked to volunteer and agreed to sit on the TAC. Each represents a stakeholder which could be affected by and can give insight on updating and strengthening the stormwater rules. Table 3 below lists each member of the TAC, the organization with which each is associated, and which stakeholder category they represented.

**Table 3: TAC Members**

Name	Association	Stakeholder Category
John Sansalone, Ph.D.	University of Florida	Academia, Florida public or private research university
Charles Shinn	Florida Farm Bureau Federation	Agricultural interest
Harvey Harper, Ph.D., P.E.	Environmental Research and Design	At-large technical expert
Richard Howard, P.E.	City of Orlando, Florida League of Cities, Inc.	City government
Kim Ornberg, P.E.	Seminole County, Florida Association of Counties	County government
David Carter, P.E.	Florida Home Builders Association	Development interest
Elizabeth Alvi	Audubon Florida	Environmental interest, general
Lesley Bertolotti	The Nature Conservancy	Environmental interest, water resource protection
Kelli Hammer Levy	Florida Stormwater Association	Florida Stormwater Association
Mark P. Thomasson, P.E. LEED AP	National Stormwater Trust, Inc.	Low-impact design and green infrastructure
Robert Beltran, P.E.	Dewberry Hydro	Stormwater design engineering and consultants
Virginia Barker	Brevard County Natural Resources Management Department	Stormwater utilities
Douglas Rillstone	Nelson Mullins	Urban redevelopment



## ***Summary of TAC Discussion***

The following section summarizes the discussions held by the TAC; however, these notes are not intended to reflect the precise language of individual TAC members. DEP's summary is meant to provide context and to document the TAC's recommendations. These conversations are organized by the charge item to which they most closely relate.

### **Charge Item One: What changes are recommended for improving existing stormwater operation regulations to ensure water resources are protected under the rulemaking directed under the Clean Waterways Act?**

The TAC suggested that DEP and WMDs will require additional staff and funding to effectively implement these recommendations.

The TAC placed strong emphasis on the need for continued maintenance for stormwater systems to preserve both their treatment efficiency and ultimately the water quality of the state. To improve the state operation and maintenance procedures, the TAC recommended that the O&M plan be attached to the permit to assist future facility owners to understand and implement maintenance obligations. The TAC also recommended more frequent inspections of stormwater systems to proactively identify needed corrective actions and to minimize costly system failures and repairs. Ideally, these inspections should align with National Pollutant Discharge Elimination System (NPDES) MS4 inspection requirements to the greatest extent possible to avoid duplication of effort. To assist and streamline inspection requirements, the TAC recommended that DEP create and implement a centralized tracking system within the next five years to aid both regulators and owners of stormwater management systems. The goal of this system would be to automate the submittal of inspection reports, send these reports to their designated regulatory authority as they are created, and provide reminders to regulators and stormwater system owners when upcoming maintenance or inspection reports are due.

For evaluating BMP systems, the TAC recommended testing a representative subpopulation of BMPs. Data obtained from testing would be used to validate or update actual treatment performance ranges for BMPs currently noted within the Applicant's Handbook. This collection of data would be analyzed

solely for future use and understanding, aiding in the protection of water quality in the future rather than being utilized to require retrofits or other corrective action to existing systems.

Regional stormwater management systems were discussed at length within the TAC meetings and were characterized as potentially being a more reliable source of water quality treatment than individual onsite stormwater treatment systems due to opportunities for reduced cost and improved maintenance reliability. Regional stormwater management systems could sell stormwater credits to applicants who do not have the ability to meet water quality criteria onsite. However, these systems must service the same local watershed as the projects to which they are conveying credits. There are already regional systems in several municipalities in Florida. The TAC discussed how much the use of regional stormwater systems should be encouraged, whether regional stormwater systems should be encouraged over on-site treatment, or whether use of credits should be a last choice scenario for circumstances in which there isn't sufficient space for on-site treatment, or whether use of regional stormwater systems should be recommended entirely on a case-by-case basis. The TAC did not come to a consensus on this question but recommended the use of regional stormwater systems and encouraged adding language in the rule to help facilitate their use, when appropriate, throughout the state.

The TAC also discussed consideration of reuse water in stormwater quality calculations. The TAC was divided on whether nutrient loading from reuse water should be incorporated into the stormwater quality calculations. Several TAC members stated we should incorporate reuse language into this rulemaking, while other TAC members stated that reuse is already heavily regulated under Chapter 62-610, Florida Administrative Code (F.A.C.). Members of the TAC did not come to a consensus as to how or whether reuse should be addressed in the updated stormwater rules; however, they recommended that this question should be considered during rulemaking efforts.

The section below outlines the conversations held by the TAC pertaining to Charge Item One.

1. Agency Staffing Recommendations.

- a. DEP and WMDs would require the necessary staff to implement all TAC recommendations pertaining to the legislative directive under the CWA.

2. Maintenance and Operation Regulation Recommendations.

- a. Require each applicant to provide an O&M plan for each stormwater system to be permitted.
  - i. Incorporate the O&M plan as an attachment to the permit for future owners.
  - ii. When a permit is transferred to a new maintenance entity, the new permittee would have to provide proof that they have received and accept responsibility for the O&M requirements. This will avoid situations in which a new maintenance entity does not accept the work, and no one is maintaining the system.
- b. Inspections should be scheduled and implemented more frequently than currently used time schedules to prevent expensive repairs of failed systems.
  - i. Department of Transportation and local government representatives expressed concern that making inspection requirements too prescriptive or restrictive may be counterproductive to the goal of improving water quality.
  - ii. The schedule and frequency of inspections should be listed in the Applicant's Handbook, Volume I, similar to Table 32.5-1 provided in the 2010 Draft Stormwater Quality Applicant's Handbook.
  - iii. BMPs should be inspected after qualifying rainfall events.
  - iv. Due to maintenance challenges such as structural integrity and treatment limitations, underground stormwater treatment systems and permeable pavement systems need more frequent inspections than other treatment systems.
  - v. Records maintenance requirements should be reduced for green roofs from what was described in the 2010 Draft Stormwater Quality Applicant's Handbook.
  - vi. Swales should be inspected more frequently than every five years.

- vii. Inspections should be required during the first year of operations at a reasonable period of time after the occurrence of a storm event for which the stormwater management system was permitted.
          - viii. To the extent practicable, ERP and MS4 inspection requirements should be consistent and/or complimentary to reduce duplication of inspections and to maintain consistent stormwater maintenance requirements.
          - ix. Inspectors would be required to have an Inspector Certificate but would not require a PE license.
    - c. DEP and WMDs should consider a centralized tracking system for stormwater system maintenance and inspections and should implement it within the next five years.
      - i. The system should be fully automated to minimize manual work and to reallocate resources in order to adequately facilitate timely and proactive compliance practices on each stormwater system site.
      - ii. The system should have the capability to automatically submit inspection reports to the designated regulatory authority, send reminders for upcoming due dates to inspectors, and provide tracking of inspection requirements.
      - iii. Inspection reports should be submitted to the designated regulatory authority at the same frequency as they are conducted/required and when they are completed.
      - iv. Consideration should be given regarding DEP and the WMDs' ability to obtain or receive funding/resources to maintain these extensive and additional compliance records, in addition to the staffing necessary for the increased compliance efforts.
3. Stormwater System Evaluation and Monitoring.
- a. DEP should evaluate a representative subpopulation of BMP types to determine the performance treatment efficiency of installed and operating BMPs.

- i. Would be used as a reference tool for a designed system's performance to quantify discharge in the area and evaluate BMP effectiveness. Re-evaluation of current performance versus initial permitted performance could include sampling to help build a database for future analysis.
  - ii. Could be used to update load reduction criteria in BMP library.
  - iii. Would not be used to require retrofits for existing permits; instead, data would be available to help inform future permit applications and/or rulemaking.
  - iv. Consider economical alternative to more expensive tests (e.g., assessing vegetation is a good indicator of a dry pond's effectiveness and function).
- b. Post-permit monitoring might not be necessary if the BMP library has its own requirements for evaluating new and existing technologies.

#### 4. Regional Stormwater Systems.

- a. Regional stormwater systems create large multi-faceted and interconnected systems that can be more effective removing pollutants, as well as more cost effective, in dollars-per-pound, for pollutants removed.
  - i. Could reduce operation/maintenance fees by consolidating systems.
  - ii. Facilities maintained by experienced professionals could be more effective than numerous decentralized systems (e.g., commercial, residential, etc.).
  - iii. Regional systems could create additional wildlife habitat and recreational opportunities for the public.
- b. Regional systems allow for more flexibility in permitting.
  - i. Can be less expensive for an individual project to pay for stormwater treatment credits providing the same treatment benefits.

- ii. The treatment purchased by the credits could be more effective than treatments being used onsite.
    - iii. Gives the project more space for development.
  - c. A potential challenge with the perpetual assurance of the credits is that any credits bought would have to be maintained in perpetuity.
  - d. There would be a need to verify the nutrient models of the regional systems to prove the systems are treating the water as predicted.
  - e. Credits would only be for treatment of the stormwater as it comes in for treatment, not for attenuation of the quantity of that water.
  - f. Pinellas County Stormwater Manual and current Applicant's Handbook, Volume IIs are a good reference for how language might be incorporated into rule.
  - g. The TAC promoted the use of regional stormwater systems and encouraged language in the rule to help facilitate their use throughout the state, when appropriate.
  - h. Regional systems should only give treatment credits to projects within the same local watershed or basin, as appropriate.
5. Reclaimed Water Consideration.
- a. Designers should incorporate reclaimed water into loading calculations, based on the facility providing reuse.
  - b. Regulation of reclaimed water loading impacts should be addressed in state rules, either in this effort or in Chapter 62-610, F.A.C.

**Charge Item Two: What measures are recommended for consistent application of the net improvement performance standard to ensure significant reductions of any pollutant loadings to a waterbody thought to be impaired by stormwater discharges?**

Multiple meetings were dedicated to determining the definitions for predevelopment, redevelopment, and net improvement. No final consensus was determined by the TAC for the definition of predevelopment. Some TAC members preferred the definition to be “natural state” prior to any development, while others argued that this definition would be difficult to defend and infeasible for a net improvement definition. Currently, predevelopment under Chapter 62-330, F.A.C., is often considered to be the state of the site at the time the application is submitted. The TAC discussed the use of a five-year average prior to the date the application is submitted. This five-year average was used in establishing the TAC’s recommended net improvement definition and associated nutrient load reduction requirements.

Redevelopment was also heavily discussed. Recommendations from the TAC were split between suggesting a definition for redevelopment and treating all development equally. The TAC addressed the concern to incentivize redevelopment over new development while still having strict, balanced regulations to protect our waters in highly urbanized redevelopment areas. The discussion for net improvement ended with a majority of the TAC recommending that redevelopment be held to the same standards as new development.

The TAC’s discussion on net improvement informed its decisions for redevelopment and predevelopment standards. The recommended net improvement definition assumes that redevelopment is treated the same as new development and that predevelopment is the average loading of the five years prior to the day the application was submitted. With this, net improvement would be calculated either as: (a) predevelopment having a higher or equal nutrient loading rate compared to that of the post-development loading; or (b) requiring treatment that will result in a specified percent reduction for the discharge load of the post-development condition. The TAC recommended that treatment resulting in the most protective measure to improve water quality would then be required. Net improvement requirements would be based on the type of receiving water body, with higher load reduction requirements for impaired waters and OFWs. Where projects are unable to meet treatment requirements, applicants would need to provide compensatory treatment within the same watershed. The TAC debated what treatment percentage should be required to achieve net improvement. There was no consensus

reached on these percentages. The majority were in favor of the percent reductions being split between TN and TP, due to the difficulty in treating TN in a wet system. Others favored these percentages remaining equal. The suggested percentages for treatment in unimpaired waters, impaired waters and OFWs can be found in Table 4.

The section below outlines the conversations held by the TAC pertaining to Charge Item Two.

1. Defining Predevelopment.

- a. Predevelopment referenced as “when the permit application is submitted.”
- b. Predevelopment could be defined as “natural conditions.”
  - i. Lengthy discussion occurred regarding the 2010 TAC proposed predevelopment definition as “natural conditions.”
  - ii. TAC questioned the technical and legal ability to define a given precondition as “natural.”
- c. Predevelopment could be defined as “long standing use” of the site.
  - i. Long standing use was considered the land use and activities of a site five years prior to the date the permit application is submitted.
  - ii. Net improvement definition discussed under Charge Item Two (defining net improvement) uses this concept of predevelopment. It encompasses both new and redevelopment sites.

2. Redevelopment.

- a. For redevelopment occurring outside of an impaired watershed, post-development nutrient loading should be less than the existing nutrient loading.
- b. Net improvement definition could be used for all development, which would eliminate the need for a redevelopment definition.
- c. Repaving is considered maintenance, not redevelopment.



- d. Not requiring reduction in nutrient loading for redevelopment institutionalizes the problem.
- e. TAC cautioned about disincentivizing redevelopment in economically impacted areas and urban centers.

### 3. Defining Net Improvement.

- a. Options discussed for net improvement criteria (see Table 4 below):
  - i. The post-development loading for new development occurring outside of impaired waters should be less than or equal to predevelopment loading.
  - ii. Set reduced percent criterion for TN and TP separately for all development.
  - iii. In all development, the loading should be either predevelopment  $\geq$  post-development or a set percent load reduction, whichever is more stringent.
- b. Net improvement requirements should be based on the type of water body the system discharges to, with higher load reduction requirements for impaired waters and OFWs.
- c. Net improvement requirements should be applied to all projects within a watershed of an impaired waterbody, not just projects that directly discharge to an impaired waterbody.
- d. Where a TMDL has been adopted, TMDL standards should be used, unless net improvement standards are more stringent, the more stringent standard should be used in this instance.
  - i. TMDL standards should be applied by reducing the predevelopment loading by the TMDL percent load reduction. There is no expectation that the loading would need to be reduced more than undeveloped/natural conditions.
- e. Areas exempt from net improvement criteria should be based on specific criteria; e.g. the number of urban versus rural areas or the percentage of impervious area on site versus a minimum total site area.

- f. Net improvement should be evaluated at the cumulative outfall(s) of the system on a mean annual basis.
- g. The use of an alternative form of compensatory treatment should be allowed in the same basin when a site cannot provide the required net improvement.

**Table 4: Net Improvement**

These were suggested percentages and would be subject to alteration based on BMP load reduction data.

Type of Project and Water Body	Not in Impaired Watershed	In Impaired Waters (w/o TMDL/ Basin Management Action Plan [BMAP] standards)	In OFWs	In TMDL/BMAP Adopted Waters
Treatment requirements as listed in Rule 62-40.432, F.A.C.	80% reduction in average annual load	Not stated	95% reduction of average annual load	TMDL/BMAP standards
Net improvement required for all development over X sq. ft.	Pre ≥ post or 55% load reduction of TN and 80% load reduction of TP, whichever is more stringent	Pre ≥ post or 65% load reduction of TN and 85% load reduction of TP, whichever is more stringent	Pre ≥ post or 80% load reduction of TN and 95% load reduction of TP, whichever is more stringent	TMDL/BMAP standards As described above in 3d
Suggested by DEP, net improvement required for all development over X sq. ft.	Pre ≥ post or 80% load reduction, whichever is more stringent	Pre ≥ post or 85% load reduction, whichever is more stringent	Pre ≥ post or 95% load reduction, whichever is more stringent	TMDL/BMAP standards As described above in 3d

**Charge Item Three: What are the options for identifying stormwater design criteria and best management practices that are effective for increasing the removal of nutrients from stormwater discharges in the state?**

The TAC identified stormwater design criteria and BMPs that help increase the removal of nutrients from stormwater in the state. First, they recommended the use of the NOAA Atlas 14 rainfall data set to replace DEP’s and WMDs’ currently accepted rainfall data set (e.g., Natural Resources Conservation Service type III rainfall distribution). The TAC discussed the BMP of dry detention basins, as its treatment efficiency can be unreliable, and concluded that dry detention basins should be kept as a reference but not listed as a presumptive BMP in the handbooks. Similarly, it was discussed that the use of isolated wetlands as a stormwater BMP resulted in large variability of nutrient removal. The TAC recommended that the state develop protective wetland criteria to ensure that wetland function is

improved by its use as a stormwater treatment function, not degraded by it. Lastly, the TAC discussed the topic of ground water. They recommended that ground water be considered in the rulemaking process but did not come to a consensus on how to address it in the rule. Some suggestions for how to incorporate ground water considerations were to evaluate ground water effects of stormwater systems on every project over a stated minimum size, on projects where there is a direct connection to surface water, for projects where there is a known impact to the ground water, or for projects in “sensitive ground water areas.”

The BMP Library is a tool suggested by DEP and promoted by the TAC to house BMPs in one central location and to streamline the process of accepting and establishing statewide criteria for BMPs. Conceptual criteria for the library was not agreed upon but can be found in Appendix A. The TAC agreed that the library would be a vital resource and that the state should support it, adequately staff it, and equip it with the technology for implementation. The library would include scientific papers, BMPs currently listed in the Applicant’s Handbook, Volume IIs, LID resources and technologies, GI technologies, and new proprietary technologies. All technologies reviewed and added to the library would be required to have third-party testing to verify their treatment efficiencies, as well as procedures for proper operation and maintenance. The TAC recommended requiring manufacturers who had performed third-party testing outside the state to demonstrate that their BMP will function as intended in Florida with respect to specific particle distributions and rainfall. The goal of the BMP Library is to provide a comprehensive list of third-party tested technologies, their treatment efficiencies, and their design criteria for applicants to reference during project design and for regulatory review of permit applications.

The section below outlines the conversations held by the TAC pertaining to Charge Item Three.

1. Stormwater Design Criteria.

- a. Update rainfall data to the NOAA Atlas 14 data set.

- i. NOAA Atlas 14 provides 40 additional years of rainfall distribution data compared with currently used district-specific rainfall maps.

- ii. Rainfall has a larger variance from currently accepted data in small watersheds; rainfall may vary differently in larger watersheds.

- iii. The TAC cautioned about a potential “domino effect” of changing reference rainfall distribution requirements; there could be unintended consequences, like changes to local government requirements and flood mapping, etc.

## 2. Dry Detention Basins.

- a. The performance treatment efficiency of dry detention basins is highly variable, making them unreliable for stormwater treatment.
- b. Dry detention basins could be kept in the BMP library if accompanied by information identifying its variability and a recommendation that it may need to be used in conjunction with another BMP.
- c. These should not be a presumptive BMP listed in the Applicant’s Handbook, Volume IIs.

## 3. Wetland Treatment.

- a. Effectiveness of wetland treatment depends on the type of wetland being used for treatment.
  - i. Water entering a wetland will result in a net nutrient equilibrium with the soil.
  - ii. Hardwood wetlands tend to have a high nutrient concentration in the soil and are less effective for treatment of stormwater with a low concentration of nutrients.
  - iii. Herbaceous wetlands can be more effective at treating stormwater.
  - iv. Constructed wetlands can be effective, but they often use nutrient-rich organic muck. While this practice promotes plant growth and wetland establishment, it may also degrade the quality of the water by adding nutrients to it during treatment.
- b. The state should develop protective wetland criteria regarding the use of isolated wetlands as a means of stormwater treatment. These criteria should address the quality and size of natural wetlands that can be used for stormwater management to ensure that the wetland function is improved by this use and not degraded by it.

4. Ground water.

a. Ground water needs to be a consideration in the rule making process.

i. Possible methods for inclusion into the rule

1. Ground water impacts should be evaluated on every project over a stated minimum size.
2. Ground water impacts should be evaluated on projects where there is a direct connection to surface water.
3. Ground water impacts should be evaluated on projects where there is a known impact to the ground water.
4. Ground water impacts should be evaluated on projects in “sensitive ground water areas.”
5. Setbacks for stormwater management systems where needed to protect sensitive ground water that could impact connected surface waters should be evaluated.
6. Criteria for ground water should be statewide and not reliant on a karst map to determine applicability.

b. BMPs in the library should assess their ground water impact.

c. Nitrogen is the potential ground water contaminate of most concern.

i. Nitrogen enters ground water from developed/urban areas at higher rates than in natural areas.

d. The state needs achievable and implementable practices other than treatment, such as eliminating nutrients at the source.

e. The TAC expressed concern that requiring permittees to attempt to eliminate nutrient loading to ground water could be too burdensome.

5. BMP Library Recommendations.

- a. See Appendix A for a list of Conceptual Criteria for a BMP Library.
- b. It is critical that a library be created that lists BMP technologies.
- c. The state could create a manual for homeowner's associations (HOAs) to explain typical maintenance issues associated with common stormwater systems. The manual could cover basic requirements for the standard maintenance needs of stormwater systems, with the understanding that it cannot cover every need or possible issue.
- d. The library should be maintained by the DEP. This effort would need to be appropriately funded and staffed.
- e. All technologies would be required to include a maintenance plan or full O&M manual for each technology.
- f. The O&M for each technology in the BMP library would outline a recommended minimum inspection frequency that would be incorporated in the agency permit.
- g. Third-party testing of both proprietary and non-proprietary technology would need to include hydrology and water chemistry/loading. Field testing would also be required to show effectiveness and to test the presumptive criteria.
- h. Third-party testing should consider the varying rainfall data and conditions in other states compared to Florida rainfall distributions and conditions.
- i. An application fee for administration of the library could be set at the discretion of the agency.
- j. Low Impact Development (LID) and Green Infrastructure (GI) should be listed in the new BMP technology library. Users should be able to sort LID/GI to locate them easily.
- k. DEP would be responsible for reviewing the applications for the BMP library, either utilizing in-house staff or contracted out to another entity.

1. The BMP Library would likely consist of four parts:
  - i. Reference archive of published academic scientific papers.
  - ii. Non-proprietary technology already having presumptive criteria from the 2010 Draft Stormwater Quality Applicant's Handbook and Applicant's Handbook, Volume IIs, with examples of these systems.
  - iii. BMP technology repository of submitted and accepted third-party tested devices or systems.
  - iv. BMP technology repository of "in progress" submissions that require further verification/review prior to acceptance.



## ***Appendix A: Conceptual Criteria for BMP Library***

### **Purpose:**

Maximize the environmental benefits and optimize the economic costs associated with stormwater design by providing open access to peer-reviewed and accepted scientific studies that demonstrate verifiable and repeatable results for a wide range of stormwater BMPs given specific parameters when implemented in the appropriate conditions.

### **How the library would be used.**

- The library would complement or replace the BMP examples in the Applicant's Handbook.
  - Region-specific attenuation criteria would remain in the Applicant's Handbook, Volume IIs.
- The library would consist of a list of technologies that can be used for stormwater design.
- In order to use the technologies from the library and be accepted for a permit, applicants would provide reasonable assurance that their project matches the conditions required for the particular technology to achieve its treatment efficiency claim.
- The applicant would be required to demonstrate through modeling that their design will function as intended.
- The library would be organized in four parts as described below.

### **BMP Library Parts:**

#### **1. BMP Reference Library.**

- Contains peer-reviewed published scientific papers that the public can access at no charge.
- This would be a reference library, not a list of technologies.

## **2. BMP Guidance Library.**

- Would contain the design requirements and examples for general BMPs not from a specific manufacturer/developer (previously described as presumptive criteria).
- Would be similar to the information in the 2010 Draft Stormwater Quality Applicant's Handbook and in the current rule adopted Applicant's Handbook, Volume IIs.
- Would still require studies to prove their effectiveness.

## **3. BMP Technology Library.**

- Specific accepted technologies/products and their design/use.

## **4. BMP Technology Library "In progress."**

- Not-yet-accepted "in progress" submissions that require further verification/review.

### **Criteria that should be stated in an application for inclusion in the Technology Library.**

- Demonstration that the technology provides an environmental benefit.
  - The technology must not create a new or alternative environmental concern by generating a hazardous byproduct or creating a hazardous condition.
- Specify the maintenance requirements for the BMP.
  - Or require O&M Manual for each technology.
- Treatment intended to be achieved by the BMP device (could select multiple).
  - Total Suspended Solids (TSS), Phosphorus, Nitrogen, Enhanced, Basic, Construction, pretreatment, oil/grease, Run-off control, LID, GI.
  - Example: Skimmer for oil/grease.
  - Example: Dry retention/wet detention/extended residence time for TSS, TP, TN.

- Could instead be categorized by Retention, Detention, and Source Control.
- Could instead be Capture versus Treatment.
- Used a method of organizing and finding technologies.
- Technology is supported by a process flow diagram or graphical representation.
  - To ensure adequate understanding of the technology, the operating condition, and response parameters from the environmental technology, a process flow schematic, photographs, or video presentation of the technology should be provided by the applicant as part of the description of the technology. A site visit to inspect the process should be part of the technology evaluation whenever it is feasible.
  - Ensure a clear understanding of the proposed technology, including the scientific and engineering principles of operation.
- Technology is designed and manufactured from materials to ensure that it is reliable.
- Technology protects the health and safety of workers and the public.
- Key treatment efficiencies.
  - A performance claim must be specific.
    - A claim must clearly specify the minimum performance or range of treatment performance that is achievable with the technology, and not simply the maximum performance.
    - A claim must clearly specify the conditions under which the claim is applicable.
    - Flow Rate versus Load Reduction performance for the technology should be considered.
    - Do not require a minimum treatment efficiency for a BMP to be placed in the library as the technology could be used in conjunction with another BMP.

- A claim must be measurable.
  - The data supporting the claim must demonstrate that the technology has a measurable effect on the specific parameter(s) identified in the performance claim.
  
- A claim must be verifiable.
  - A claim must be verifiable using acceptable test procedures and analytical techniques.
  - Conditions tested should be applicable to Florida environment and conditions.
  - BMP results must be reproducible