

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

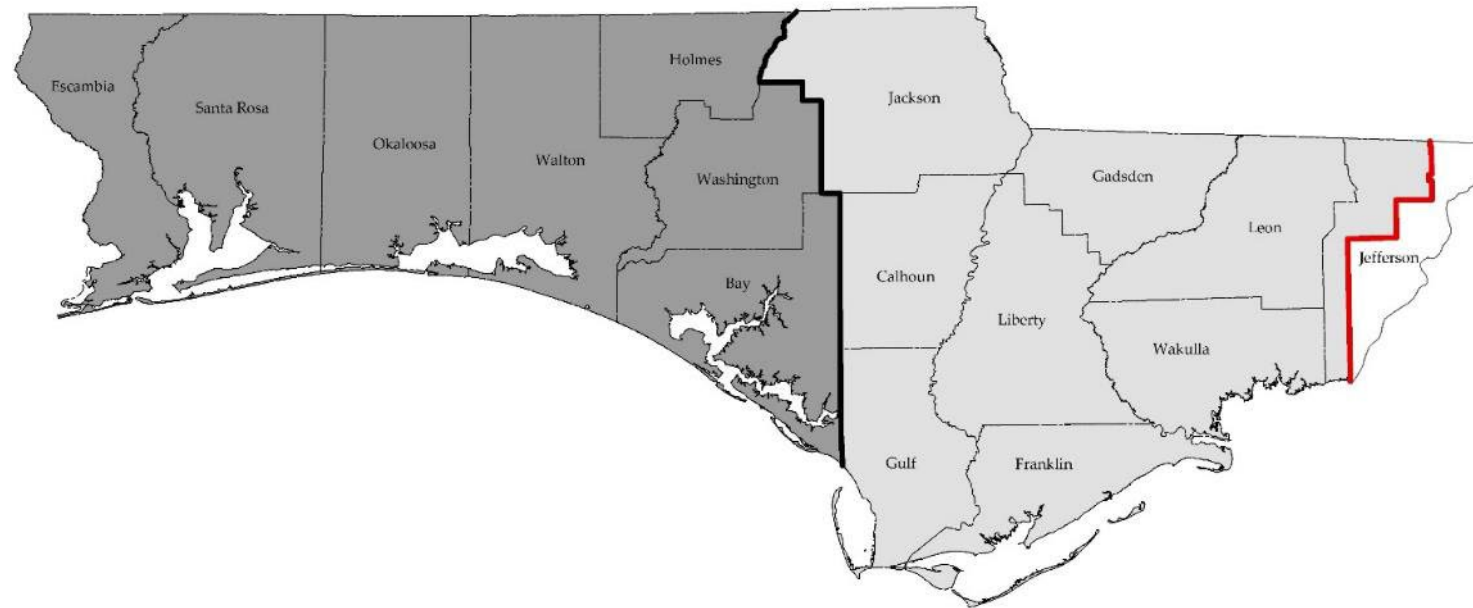
Statewide Environmental Resource Permitting
Rules for Stormwater Design and Operation
Regulations Rule Development Workshop for
Applicant's Handbook
Volume II, Appendices, and References and
Design Aids



Stakeholder Input



- This is one of two development workshops related to rule amendments to Applicant's Handbook Volume II (A.H. Vol. II) of Environmental Resource Permitting (ERP) within the Northwest Florida geographical region.
- We encourage input from all stakeholders, including making recommendations for rule edits and/or providing comments.
- Please submit all comments and recommendations to Stormwater2020@FloridaDEP.gov.



Geographical Region for Northwest Florida Water Management District

Legislation Direction and the State's Response

- In 2020, Florida Senate Bill (SB) 712 (Chapter 2020-150, Laws of Florida) passed. This is called the Clean Waterways Act.
- The Clean Waterways Act directed the Florida Department of Environmental Protection (FDEP) and the five water management districts (WMDs) to update stormwater design and operation regulations under Part IV, Chapter 373, Florida Statutes, using the latest scientific information.
- The FDEP, with the five WMDs, have hosted four rule development workshops addressing the updates to the stormwater design and operation regulations required for Chapter 62-330, Florida Administrative Code (F.A.C.) and the associated ERP Applicant's Handbook Volume I.



For more information regarding the previous A.H. Volume I workshops please visit:

<https://floridadep.gov/water/engineering-hydrology-geology/content/clean-waterways-act-stormwater-rulemaking-workshops>

Rule Development Goals – Steps Needed



Currently, excess nutrients represent one of the leading causes of impairment in our surface waterbodies.



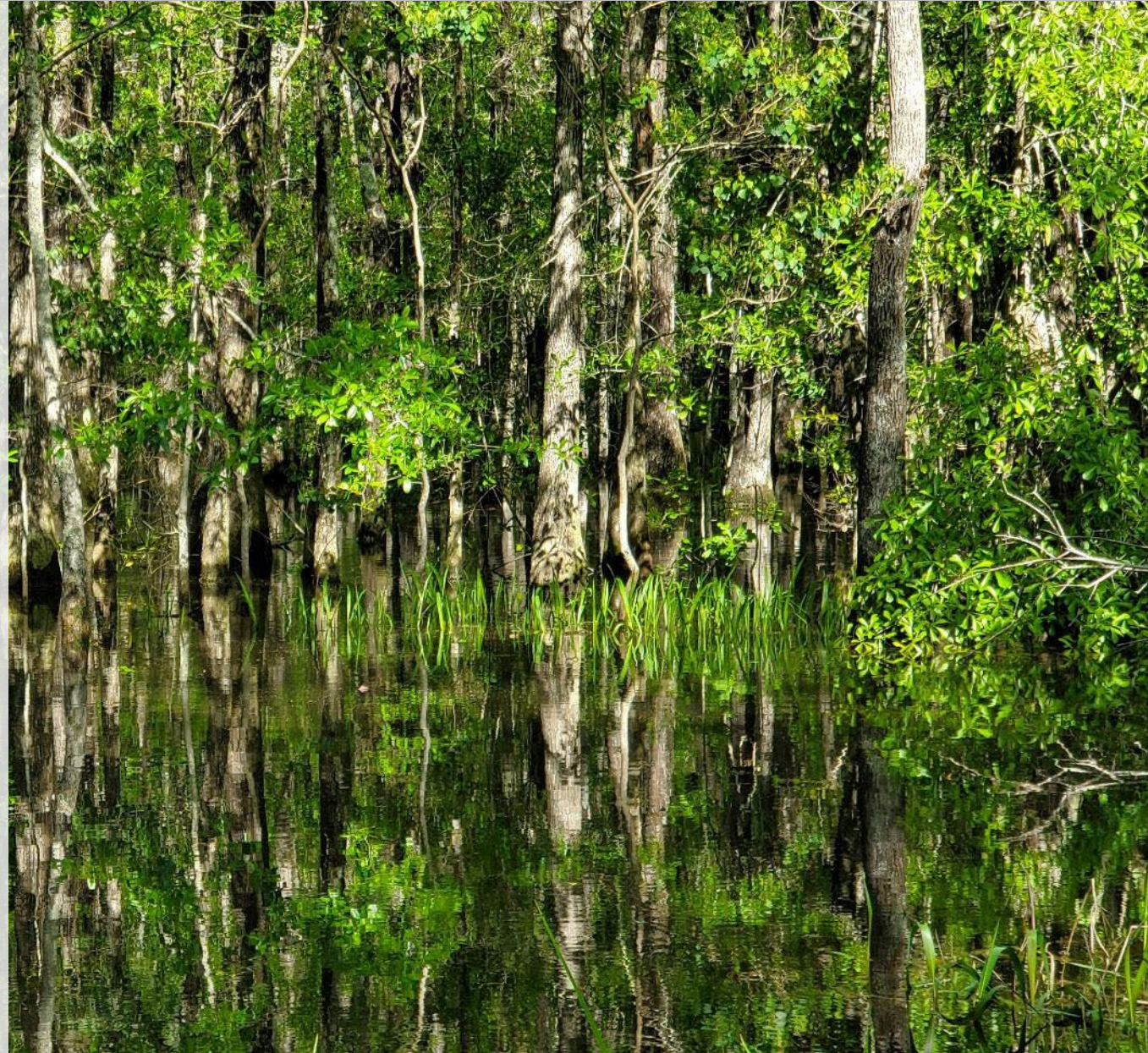
Therefore, it is important that stormwater design criteria and operation requirements provide for effective nutrient removal.



Statewide regulations will provide updated Best Management Practice design criteria by creating consistency throughout the state.



Statewide regulations will also provide greater protection to downstream systems from nutrients in stormwater.



Rule Development Goals – Achieved Through



- Refinement to ERP A.H. Volume I and Volume II.
- Create a new resource listing of Stormwater Design Aids and Examples of accepted BMPs. This is called the BMP Library.



NFWFMD's Role and Rulemaking Efforts



- Due to the revisions made to address the new Statewide Stormwater requirements in ERP A.H. Volume I, NFWFMD and FDEP made necessary changes within ERP A.H. Volume II, Appendices, and the References and Design Aids of Volume II to address the following:
 - Redundant Rule Language
 - Obsolete Rule Language
 - Refinement of Rule Language
 - Expansion of Existing Rule Language for Better Clarification



Please note that water quantity requirements, under Part III of Volume II, will remain the same under this rulemaking effort!



The NFWFMD's ERP Applicant's Handbook Volume II (ERP A.H. Vol. II)

Here are the revisions that have occurred so far for ERP Applicant's Handbook Volume II in the geographical region of Northwest Florida.

Revisions are ongoing to the ERP A.H. Vol. II, Appendices, and References and Design Aids. Further revisions may occur based on stakeholder input and comments. We encourage you to periodically check the Clean Waterways Act Stormwater Rulemaking portion of the FDEP's website.

<https://floridadep.gov/water/engineering-hydrology-geology/content/clean-waterways-act-stormwater-rulemaking-workshops>

ERP A.H. Vol. II – Section 2.0 Definitions



~~“Aquitard” means a layer of low permeability material, such as clay or rock, adjacent to an aquifer that functions to prevent the transmission of significant quantities of groundwater flow under normal hydraulic gradients.~~

“Aquitard” was removed and replaced under Section 2.0(a)9 of ERP A.H. Vol. I

“Aquitard” or “Confining Layer” means a layer of low permeability material, such as clay or rock, adjacent to an aquifer that functions to prevent the transmission of significant quantities of groundwater flow under normal hydraulic gradients.



Section 2.2 Existing Ambient Water Quality

In instances where an applicant is unable to meet water quality standards because existing ambient water quality does not meet standards and the system will contribute to this existing condition, mitigation for water quality impacts can consist of water quality enhancement. In these cases, the applicant must implement mitigation measures that are proposed by or acceptable to the applicant that will cause net improvement of the water quality in the receiving waters for those parameters which do not meet standards.

All of Section 2.2 ERP A.H. Vol. II was removed and replaced with further explanation under Section 8.2.3 ERP A.H. Vol. I. This is largely associated with systems discharging to Impaired Waters.

Section 8.2.3 ERP A.H. Vol. I will now have very specific performance requirements for systems discharging to an Impaired Water.



Section 2.4 Maintenance Access

~~Regular maintenance is crucial to the long-term effectiveness of stormwater management systems. Such systems must be designed to allow personnel and equipment access and to accommodate regular maintenance activities. For example, high maintenance features such as inlets, outlets, and pumps should be easily accessible to maintenance equipment and personnel...~~

All of Section 2.4 ERP A.H. Vol. II was removed, replaced, and expanded under Section 12.4(b) ERP A.H. Vol. I



Due to the removal of several full sections, portions of Section 2 are being renumbered.

Section 2.6 Retrofits of Existing Stormwater Management Systems



If the applicant has conducted, and the Agency has approved, an analysis that provides reasonable assurance that the proposed stormwater quality retrofit will provide the intended pollutant load reduction from the existing system or systems, the project will be presumed to comply with the requirements in sections 4.0 through 4.4 of this Volume.

Section 2.6(b)2 ERP
A.H. Vol. II was
removed due to
reference of
presumption.



Section 2.6 Retrofits – cont.



Section 2.6(b)3 ERP A.H. Vol. II was revised and expanded to address water quality data and net improvement to total nitrogen and total phosphorus.

The pollutants of concern will be determined on a case by case basis during the permit application review based upon factors such as the type and intensity of land use, are based upon the existing water quality data within the area subject to the retrofit, and the degree of impairment or water quality violations in the receiving waters. If no water quality data exists and there are no listed impairments or water quality violations in the receiving waters, the applicant shall demonstrate such a net improvement whereby the pollutant loads discharged from the system shall be less than those discharged based on the project's existing condition for total nitrogen and total phosphorus.



Retrofit will continue to be a “net benefit” type of authorization.

Section 2.11 Dam Safety



Minor revisions were made to Section 2.11 (now Section 2.8) ERP A.H. Vol. II which include the following:

- Reference to Section 8.4.5 and Appendix L of ERP A.H. Vol. I.
- Rename of Hazard Ratings. Now called Downstream Hazard Potential.
 - High
 - Significant
 - Low
- Updated Principal Spillway required storm to 25-year / 24-hour for Low Downstream Hazard Potential.



[Appendix L of ERP A.H. Vol. I](#) is NEW!
“Additional Criteria for Dam Systems”

Section 2.12 Inspections to Ensure Proper Operation and Maintenance



~~In accordance with subsection 62 330.311(1), F.A.C., stormwater management systems, dams, impoundments, reservoirs, appurtenant work, and works designed by a registered professional shall be inspected and documented by the registered professional as follows, unless otherwise specified in the permit:~~

Section 2.12 ERP A.H. Vol. II was removed and replaced under Section 12.5 ERP A.H. Vol. I after a certain period of time and with a permit modification.



All permitted stormwater management systems will start with an annual inspection requirement. After 5 years, the frequency may be adjusted through a permit modification.

PART III — Stormwater Quantity/Flood Control



Minor edits and language removals to Part III of ERP A.H. Vol. II has occurred to remain consistent.

This includes the following:

- Removal of last statement of Section 3.1 ERP A.H. Vol. II to allow sites to be of any size to apply closed basin and direct discharge to tidally influenced waterways.
- Additional references to Part II of A.H. Vol. I due to Section 4.5.1 A.H. Vol. II being related to Water Quality.



Section 3.3(c) Discharges to Tidally-influenced Waters

The peak discharge requirements of this section are not required for systems that discharge directly into the ~~Gulf Intracoastal Waterway, including manmade portions of the Gulf Intracoastal Waterway, or to the Gulf of Mexico, or to other tidally-influenced waterways.~~ For the purposes of this section, “tidally-influenced waterways” includes surface waters that are characterized by a repeatable monthly average tide range of more than 0.1 feet.

Section 3.3(c) ERP A.H. Vol. II was revised for better clarification on systems that directly discharge to tidally influenced waterways.



PART IV — ADDITIONAL Stormwater Quality Standards and Requirements



The bulk of the revisions to ERP A.H. Vol. II occurred in Part IV.

This includes the following:

- Inclusion of language related to Part II of Vol. I.
- Additional references to how standards apply.
- Removal of duplicative sections.
- Removal of presumptive example for calculating runoff from 1-inch of rainfall.



Please make note that Part IV ERP A.H. Vol. II is now called ADDITIONAL Stormwater Quality Standards and Requirements. All stormwater quality requirements and performance standards are now under Section 8.3 and Section 9.0 ERP A.H. Vol. I.

Section 4.5.1 Peak Discharge Attenuation Criteria to Protect Streambanks

Section 4.5.1 ERP A.H. Vol. II was revised for better clarification of this requirement.

For systems serving new construction that is greater than 50 percent impervious (excluding water bodies and the area providing stormwater treatment) over the project area, the post-development peak discharge rate must not exceed the pre-development peak discharge rate for the 2-year, 24-hour design storm event, utilizing a Natural Resources Conservation Service (NRCS) type III rainfall distribution with an antecedent moisture condition II. Outlet controls shall be designed so that required detention volumes are fully bled-down at sufficient rates that result in non-erosive velocities. ~~Projects that modify existing systems, including adding new impervious surfaces, are exempt from this criterion when the modification will not cause significant adverse impacts to water resources using the criteria in Rule 62-330.301, F.A.C.~~ Projects that modify existing systems, including adding or removing impervious surfaces, are not exempt from this criterion and are required to demonstrate that the modification will not cause significant adverse impacts to water resources using the criteria in Rule 62-330.301, F.A.C. Projects that discharge to tidally-influenced waters tide in accordance with **Section 3.3(c) of this Volume** are exempt from this criterion.



Section 4.6 Erosion & Sediment Control Criteria for SW Management Systems



~~Land clearing activities, including the construction of stormwater management systems, shall be designed, constructed, and maintained at all times so that erosion and sedimentation from the system, including the areas served by the system, do not cause violations of applicable state water quality standards in receiving waters. Further, because sedimentation of off-site lands can lead to public safety concerns, erosion and sediment controls shall be designed and implemented to retain sediment on-site as required by subsection 62-40.432(2), F.A.C. In particular, the erosion and sediment control requirements described in **Part IV of Applicant's Handbook Volume I** shall be followed during construction of the system.~~

Section 4.6 ERP A.H. Vol. II was removed because it is duplicative to the language under Part IV of ERP Vol. I.



Section 4.7 Oil and Grease Control

Systems that receive stormwater from contributing areas that are greater than 50 percent impervious (excluding water bodies) or which are a potential source of oil and grease (e.g., parking lots and gasoline stations) must include a baffle, skimmer, grease trap or other effective mechanism suitable for preventing oil and grease from leaving the stormwater system in concentrations that would cause a violation of water quality standards. Designs must assure sufficient clearance between the skimmer and structure or pond bottom to ensure that the hydraulic capacity of the structure is not affected. A typical illustration of a skimmer on an outlet structure is shown in ~~Figure 4.7-1~~.

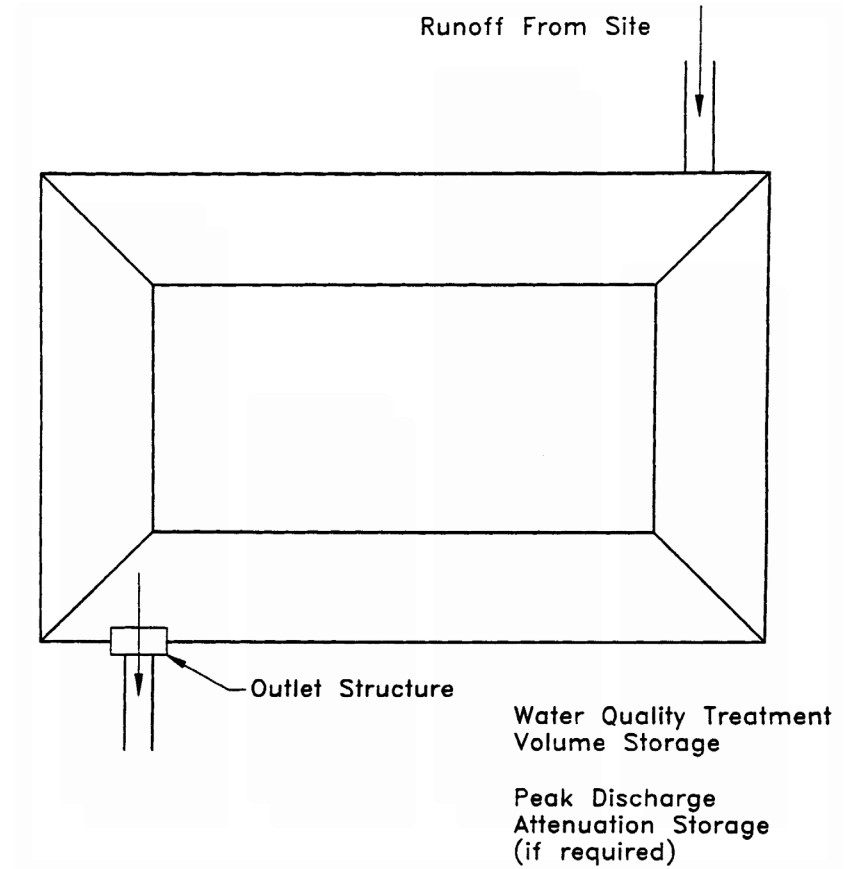
Section 4.7 ERP A.H. Vol. II was removed and replaced under Section 8.4.6 ERP A.H. Vol. I.



Section 4.8 On-Line and Off-Line Stormwater Systems

Section 4.8 (now Section 4.6) ERP A.H. Vol. II was revised to further address BMP trains.

- On-Line Systems – No Change
- Off-Line Systems – Changes remove half (0.5) inch requirement and to address BMP Treatment Trains



Example of On-Line System (has not changed)

Section 4.8 On-Line and Off-Line Stormwater Systems cont.

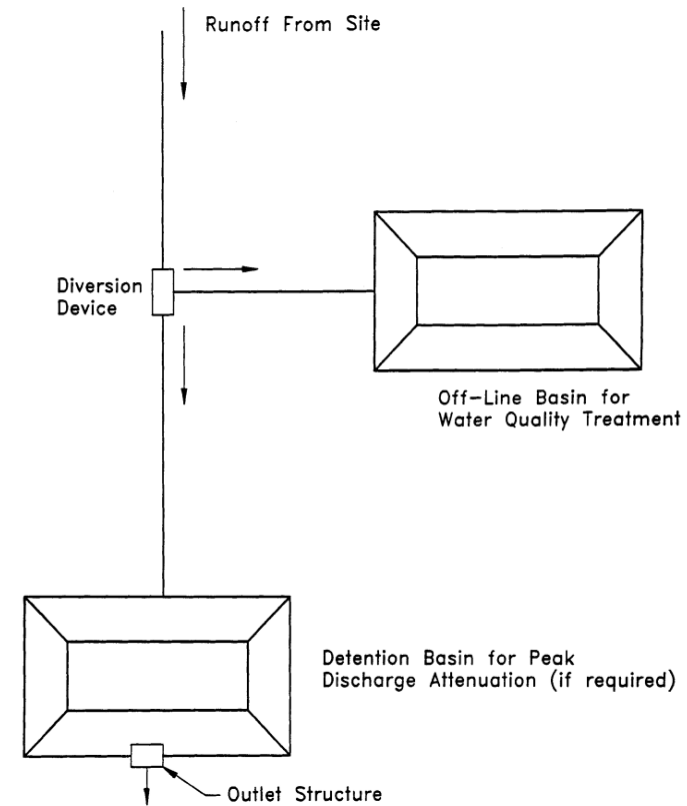


Off-line system will no longer be based on the half (0.5) inch volume requirement.

Off-line systems are generally more effective at removing pollutants than on-line systems because accumulated pollutants cannot be "flushed-out" during storm events that produce runoff volumes exceeding the treatment storage volume. Consequently, on-line systems must treat a greater volume of runoff than off-line systems to reduce the likelihood of flushing accumulated pollutants out of the system and achieve the minimum stormwater treatment levels required by the Water Resource Implementation Rule (Chapter 62-40, F.A.C.). Treatment volumes for each of the stormwater treatment practices are discussed in **sections 5 through 12 of Part V of this Volume.**

The treatment storage provided in an off-line system can be considered in the stage/storage calculations for peak discharge attenuation. Off-line systems shall be designed to bypass essentially all additional stormwater runoff volumes greater than the required treatment volume to a discharge point or other detention storage area. Of course, there will be some incremental additional storage in the off-line system associated with the hydraulic grade line at the weir structure in the typical diversion structure. This will depend on the size of the weir, but the weir shall be sized to pass the design or excess flow with minimal headwater.

Proposed off-line systems that will also serve to provide significant detention storage above the required off-line treatment storage volume will be considered to function as on-line systems. These systems shall either be designed to meet on-line treatment volume requirements, or the designer registered professional must discuss the merits of the particular system (in terms of potential of flushing accumulated pollutants) with Agency staff in a pre-application conference. In such cases, an applicant must provide reasonable assurance that the on-line treatment volume is not necessary to meet the other applicable criteria for issuance.



Example of Off-Line System (No longer based on 0.5-inch "first flush" presumptive requirements)

Section 4.9 Hazardous or toxic substances



~~Systems serving a use that produces or stores hazardous or toxic substances shall be designed to have no stormwater discharge that contains such substances.~~

Section 4.9 ERP A.H.
Vol. II was removed
and replaced under
Section 8.4.7 ERP A.H.
Vol. I.



Section 4.12 Runoff from One-inch of Rainfall



Section 4.12 ERP A.H. Vol. II has been removed due to the new Water Quality Requirements and Performance Standards for each site and Best Management Practice.



The water quality requirements for stormwater are changing from being “technology-based” (presumptive) to “performance based”.

Section 4.13 Alternative Designs



An applicant may provide alternative designs to those provided in this Volume, such as when filter systems are proposed. These alternative designs will be considered by the Agency in determining whether, based on plans, test results, or other information that the alternative design is appropriate for the specific site conditions to provide for a design that can provide equivalent treatment, attenuation, and protection to water resources as the best management practices adopted in this Volume. In otherwise determining whether reasonable assurance has been provided for compliance with this paragraph, the Agency shall, where appropriate, consider:

Section 4.13 ERP A.H. Vol. II was removed and replaced under Section 9.5.2 ERP A.H. Vol. I.

An applicant can propose alternative BMPs not listed in the AH Volume II Handbooks. These will be considered by the Agency as alternative designs and evaluated based on engineering plans, quality assurance plans, representative monitoring data in Florida, and test results for the specific site conditions of the project. Applicants must provide reasonable assurance that their proposed alternative designs provide the level of treatment that they claim and that will achieve the required performance standards in this Volume, either by the alternative design by themselves or in conjunction with other BMPs. In determining whether the alternative design provides this reasonable assurance, the Agency will consider:

- (a) Whether the alternative BMP has been appropriately tested and reviewed by scientific methods to substantiate its treatment efficiency claim; and
- (b) Whether acceptable provisions have been made to ensure that the system will be effectively operated and maintained, as described in Section 12 of this volume.



PART V — Best Management Practices



Part V ERP A.H. Vol. II primarily revised to language related to calculating the required treatment volumes for each system.



Section 5.2 Retention – Treatment Volume

~~The first flush of runoff shall be routed to the retention basin and percolated into the ground. For systems that discharge to Class III receiving water bodies, the applicant shall provide retention for one of the following:~~

- ~~(a) Off-line retention of the first one-half inch of runoff from the contributing area; or~~
- ~~(b) On-line retention of the runoff from one inch of rainfall over the contributing area. A minimum volume of one-half inch of runoff from the contributing area is required.~~

Section 5.2 ERP A.H. Vol. I was removed and replaced with the following:

The Required Treatment Volume necessary to achieve the treatment efficiency shall be routed to the retention basin and percolated into the ground. The required nutrient load reduction for the retention basin and, if necessary, associated BMPs in the BMP treatment train will be determined by the applicable performance standard as set forth in Section 8.3. of Volume I and methodology described in Section 9 of Volume I. Treatment volume shall be determined by the treatment efficiency.



Sections 6.0 to 6.9 Underdrains



All Sections related to Underdrains have been removed.

The underdrain criteria will be adsorbed into the Dry Detention with Filtration Criteria under Appendix B of ERP A.H. Vol. II.

This will be further discussed under the changes made to Appendix B.



All previously permitted underdrains will continue to be required to meet the current rule language unless modified.

Section 7.2 Exfiltration – Treatment Volume

The first flush of runoff shall be collected in the exfiltration trench and infiltrated into the surrounding soil. For systems which discharge to Class III receiving water bodies, the applicant shall provide one of the following:

- (a) Off line storage of the first one-half inch of runoff from the contributing area; or
- (a) On line storage of the runoff from one inch of rainfall over the contributing area. A minimum volume of one-half inch of runoff from the contributing area is required.

For direct discharges to OFWs, the applicant shall provide storage for at least an additional fifty percent of the applicable treatment volume specified for off line storage in ~~(a) and (b), above.~~

Exfiltration trench systems must be designed to have the capacity to retain the required treatment volume without considering discharges to ground or surface waters.

Section 7.2 (now Section 6.2) ERP A.H. Vol. II was removed and replaced with the following:

The Required Treatment Volume necessary to achieve the treatment efficiency shall be routed to the exfiltration trench and percolated into the ground. The required nutrient load reduction for the exfiltration trench and, if necessary, associated BMPs in the BMP treatment train will be determined by the applicable performance standard as set forth in Section 8.3. of Volume I and methodology described in Section 9 of Volume I. Treatment volume shall be determined by the treatment efficiency.



Section 7.5 Exfiltration – Minimum Dimensions

The perforated pipe shall be designed with a 12-inch minimum inside pipe diameter or hydraulic equivalent, and a 3-foot minimum trench width. The perforated pipe shall be located within the trench section to minimize the accumulation of sediment in the aggregate void storage and maximize the preservation of this storage for stormwater treatment. To meet this goal, it is recommended that the perforated pipe be located at or within 6 inches of the trench bottom.

Section 7.5 (now Section 6.5) ERP A.H. Vol. II was revised to allow for hydraulic equivalent pipe diameters.



Section 8.2 Wet Detention – Treatment Volume



~~For wet detention systems, the design treatment volume is one inch of runoff from the contributing area.~~

~~Additional treatment volume criteria apply to systems that discharge directly to OFWs (see section 8.12 of this Volume).~~

Section 8.2 (now Section 7.2) ERP A.H. Vol. II was removed and replaced with the following:

The required nutrient load reduction for the wet pond and, if necessary, associated BMPs in the BMP treatment train will be determined by the applicable performance standard as set forth in Section 8.3. of Volume I and methodology described in Section 9 of Volume I. Treatment volume shall be determined by the treatment efficiency.



Section 8.5 Wet Detention – Permanent Pool

Section 8.5 (now Section 7.5) ERP A.H. Vol. II will require a minimum residence time of **21 days**. This revision accommodates the criteria for having 50 percent additional permanent pool volume.

A significant component and design criterion for the wet detention system is the storage capacity of the permanent pool (i.e., the ~~section~~**Section** of the pond that holds water at all times). The permanent pool shall be sized to provide at least a **1421**-day residence time based upon average wet season rainfall (rainfall occurring over the wettest four months of an average year; for Northwest Florida, these are June through September).



Section 8.6 Wet Detention – Littoral Zone

The littoral zone is that portion of a wet detention pond which is designed to contain rooted aquatic plants. The littoral area is usually provided by extending and gently sloping the sides of the pond down to a depth of 2 to 3 feet below the normal water level or control elevation. Also, the littoral zone can be provided in other areas of the pond that have suitable depths (i.e., a shallow shelf in the middle of the lake). Littoral Zones are not required but can be used to increase the treatment efficiency of the wet pond system.

Section 8.6 (now Section 7.6) ERP A.H. Vol. II no longer requires littoral zones.



Littoral Zones have been proven to provide a further reduction in pollutant loading for total nitrogen and total phosphorus.

Section 8.6 Wet Detention – Littoral Zone Alternative



The alternative design criteria which allowed for 50 percent additional permanent pool volume has been removed from Section 8.6 (now Section 7.6) ERP A.H. Vol. II since it is addressed with a minimum of 21-day residence time under Section 7.5 ERP A.H. Vol. II.

~~As an alternative option to establishing and maintaining vegetative littoral zones as described in this section, the applicant can provide either:~~

- ~~(e) An additional 50% of the appropriate permanent pool volume as required in **section 8.5, above,** or~~
- ~~(f) Pre-treatment of the stormwater prior to the stormwater entering the wet detention pond. The level of pre-treatment must be at least that required for retention, underdrain, exfiltration, or swale systems. See **section 8.10, below,** for additional information on pre-treatment.~~



Section 8.7 Wet Detention – Pond Depth

Section 8.7 (now Section 7.7) ERP A.H. Vol. II has been revised to address deeper ponds:

A maximum pond depth of 12 feet is required, and a mean depth (pond volume divided by the pond area at the control elevation) between 2 and 8 feet is required. Deeper ponds are allowable, provided the registered professional affirmatively demonstrates that any design for deeper pond depths will not cause stratification within the water column and will prevent resultant anoxic bottom waters and sediments. Many of the nutrients and metals removed from the water column accumulate in the top few inches of the pond bottom sediments. If a pond is deep enough, it will have a tendency to stratify, creating the potential for anoxic conditions developing at the bottom of the pond. An aerobic environment should be maintained throughout the water column in wet detention ponds in order to minimize the release of nutrients and metals from the bottom sediments. The maximum depth criteria minimizes the potential for significant thermal stratification which will help maintain aerobic conditions in the water column that should maximize sediment uptake and minimize sediment release of pollutants.

On the other hand, the minimum mean depth criteria minimizes aquatic plant growth which may be excessive if the pond is too shallow.



The registered professional is strongly encouraged to review the design criteria of a wet detention system as detailed in the 2010 Statewide Stormwater Draft.

Section 8.10 Wet Detention – Pre-Treatment



Section 8.10 (now Section 7.10) ERP A.H. Vol. II has been renamed as Treatment Train Nutrient Reduction. This Section has been revised to rebrand pre-treatment which will now be part of the BMP Treatment Trains as referenced in Part II of Volume I.

BMPs can be implemented in combination or in conjunction with one another in a series called a "BMP Treatment Train." If used, BMP Treatment Train efficiencies must account for the reduced loading transferred to subsequent downstream treatment devices. As stormwater pollutant concentrations are reduced in each BMP in the treatment train, the ability of a BMP Treatment Train to further reduce stormwater pollutant concentrations and loads is diminished. This is shown in Equation 9-5. This equation assumes each BMP acts independently of upstream BMPs and that upstream BMPs do not impact performance of downstream BMPs. If the BMP acts in combination with the upstream BMP, the designer will consider the use of another methodology to determine the resultant efficiency of the BMP Treatment Train.

Equation 9-5: Overall Treatment Train Efficiency for systems in series

$$\text{Overall Treatment Train Efficiency} = \text{Eff1} + [(1 - \text{Eff1}) \times \text{Eff2}] + [(1 - (\text{Eff1} + \text{Eff2})) \times \text{Eff3}]$$

Eff1 = efficiency of initial treatment system
Eff2 = efficiency of second treatment system
Eff3 = efficiency of third treatment system

~~“Pre-treatment” is defined as the treatment of a portion of the runoff prior to its entering the wet detention pond. Pre-treatment increases the pollutant removal efficiency of the overall stormwater system by reducing the pollutant loading to the wet detention pond. Pre-treatment may be used to enhance the appearance of the wet detention pond or meet the additional treatment criteria for discharges to receiving water which are classified as OFWs.~~

For developments where the appearance of the lake is important, ~~pre-treatment~~ a series of BMPs can reduce the chances of algal blooms and slow the eutrophication process. Some types of ~~pre-treatment~~ Green Stormwater Infrastructure or Low Impact Development practices include utilizing vegetative swales for conveyance instead of curb and gutter, perimeter swales or berms around the lake, oil and grease skimmers on inlet structures, retention storage in swales with raised inlets, or shallow landscaped retention areas (when soils and water table conditions will allow for adequate percolation).

~~For systems in which pre-treatment is utilized to meet the additional design criteria requirements for systems with a direct discharge to an OFW, pre-treatment practices must meet the appropriate design and performance criteria for that BMP. Acceptable types of pre-treatment include the following:~~

- ~~(a) — Retention systems which meet the design and performance criteria in **section 5 of this Volume;**~~
- ~~(b) — Underdrain systems which meet the design and performance criteria in **section 6 of this Volume;** or~~
- ~~(c) — Swales systems which meet the design and performance criteria in **section 9 of this Volume.**~~

~~Alternative pre-treatment methods will be evaluated on a case-by-case basis by the Agency. Applicants or system designers are encouraged to meet with Agency staff in a pre-application conference if alternative methods are proposed.~~

Section 8.12 Direct Discharges to Outstanding Florida Waters



~~Wet detention systems which have a direct discharge to an OFWs, must provide either:~~

- ~~(a) An additional fifty percent of both the required treatment and permanent pool volumes; or~~
- ~~(b) Pre-treatment of the stormwater prior to entering the wet detention pond. The level of pre-treatment must be at least that required for retention, underdrain, or swale systems (see section 8.10 of this Volume).~~

Section 8.12 ERP A.H. Vol. II was removed due to new minimum performance standards for Outstanding Florida Waters (OFWs) as required under Section 8.3.3 ERP A.H. Vol. I.



Section 9.1 Swales - Description

Section 9.1 (now Section 8.1) ERP A.H. Vol. II addresses that Swales will **ONLY** be part of a BMP Treatment Train.

Swales can also be utilized as part of a treatment train to provide ~~pre-treatment~~ of runoff prior to its release to another treatment BMP such as wet detention (see ~~section~~ **Section 87.10 of this Volume**), or wetlands stormwater management systems (see ~~section~~ **10.3 of this Volume**). Incorporating swales as part of a treatment train ~~Pre-treatment~~ reduces the pollutant loading to the downstream treatment system, increases the pollutant efficiency of the overall stormwater management system, and reduces maintenance. In the case of wet detention systems, ~~pre-treatment~~ swales may be used to meet the performance standards set forth in Section 8.3 of Volume I, ~~additional treatment criteria for discharges to sensitive receiving waters (OFWs)~~. For developments where the appearance of the downstream system (i.e., wet detention lake) is important, ~~pre-treatment~~ swales can reduce the probability of algal blooms occurring and slows the eutrophication process.



Section 9.2 Swale – Treatment Volume

The runoff from the site shall be routed to the swale system for conveyance and percolation into the ground. For systems which discharge to Class III receiving water bodies, the swales should be designed to percolate 80% of the runoff from the 3-year, 1-hour design storm during the storm event as influenced by the time of concentration, assuming average antecedent conditions. The remaining 20% of the runoff from the 3-year, 1-hour storm event can be discharged offsite by the swale system.

Swale systems which directly discharge to OFWs, shall be designed to percolate all of the runoff from the 3-year, 1-hour storm.

Section 9.2 (now Section 8.2) ERP A.H. Vol. II was removed and replaced with the following:

The Required Treatment Volume necessary to achieve the treatment efficiency shall be routed to the swale and percolated into the ground. The required nutrient load reduction for the swale and, if necessary, associated BMPs in the BMP treatment train will be determined by the applicable performance standard as set forth in Section 8.3. of Volume I and methodology described in Section 9 of Volume I. Treatment volume shall be determined by the treatment efficiency.



Section 10.3 Wetland Stormwater Treatment – Treatment Volume



For systems discharging to Class III waters, the design treatment volume is one inch of runoff from the contributing area. Those systems which directly discharge to OFWs shall provide an additional fifty percent of the treatment volume.

If the wetland alone cannot provide the treatment volume, then other best management practices must be incorporated upstream and outside of the wetland to store the proper level of runoff. Utilization of other BMPs must not adversely affect the ability of the wetlands stormwater management system from meeting the requirements of this section.

Section 10.3 (now Section 9.3) ERP A.H. Vol. II was removed and replaced with the following:

The Required Treatment Volume necessary to achieve the treatment efficiency shall be routed to the wetland and percolated into the ground. The required nutrient load reduction for the wetland and, if necessary, associated BMPs in the BMP treatment train will be determined by the applicable performance standard as set forth in Section 8.3. of Volume I and methodology described in Section 9 of Volume I. Treatment volume shall be determined by the treatment efficiency.



Section 10.6 Wetland Stormwater Treatment – Wetland Function



Section 10.6 (now Section 9.6) ERP A.H. Vol. II was revised to no longer reference pre-treatment and incorporate BMP Treatment Trains.

Provisions must be made to remove sediment, oils and greases from runoff entering the wetland. This can be accomplished through incorporation of adjacent sediment sumps, forebays, baffles and dry vegetated swales or a combination thereof. Normally, a dry vegetated swale system designed for detention of the first one-fourth inch of runoff with an overall depth of no more than 4 inches will satisfy the requirement for removal of sediment, oils and greases. ~~In addition, pre-treatment~~ Additional BMP's can be utilized as part of a treatment train to attenuate stormwater volumes and peak discharge rates so that the wetland's hydroperiod is not adversely altered.

Section 3.3(c) ERP A.H. Vol. II was revised for better clarification on systems that directly discharge to tidally influenced waterways.



Section 11.1 Vegetated Natural Buffers (VNBs) – Description

Section 11.1 (now Section 10.1) ERP A.H. Vol. II was revise to clarify that VNBs are not a primary source of treatment.

Vegetative natural buffers are not intended to be the primary stormwater management system for residential developments. They are most commonly used only to treat those rear-lot portions of the development that cannot be feasibly routed to the system serving the roads and fronts of lots. A schematic of a typical VNB and its contributing area is presented in **Figure 1110-1**.



Section 12.2 Stormwater Harvesting– Treatment Volume



A portion of the runoff from the site must be stored in the pond and subsequently withdrawn through the reuse system. For systems which discharge to Class III receiving water bodies, the system must reuse at least 50 percent of the average annual runoff discharging to the reuse pond.

Stormwater reuse systems which directly discharge to OFWs, must reuse at least 90 percent of the average annual runoff discharging to the pond. A methodology for designing reuse systems to meet the above criteria is presented in section 3 of the Volume II Design Aids.

Section 12.2 (now Section 11.2) ERP A.H. Vol. II was removed and replaced with the following:

The Required Treatment Volume necessary to achieve the treatment efficiency shall be percolated into the ground, typically through irrigation. The required nutrient load reduction from the stormwater harvesting and associated BMPs in the BMP treatment train will be determined by the applicable performance standard as set forth in Section 8.3. of Volume I and methodology described in Section 9 of Volume I. Volume of water used for Stormwater Harvesting shall be determined by water use volume and rate.



Section 12.4 Stormwater Harvesting – Littoral Zone

Section 12.4 (now Section 11.4) ERP A.H. Vol. II was revised to include references to the Design Aids for recommended native plants for the littoral zone.

The littoral zone is established with native aquatic plants by planting and/or the placement of wetland soils containing seeds of native aquatic plants. A specific vegetation establishment plan must be prepared for the littoral zone. The plan must consider the hydroperiod of the pond and the type of plants to be established. The Florida Development Manual provides a list of recommended native plant species suitable for littoral zone planting. Additional information for a list of recommended native plant species is included in the **References and Design Aids for Volume II for wet detention.** In addition, a layer of muck can be incorporated into the littoral area to promote the establishment of the wetland vegetation. When placing muck, precautions must be taken to prevent erosion and turbidity problems in the pond and at its discharge point while vegetation is becoming established in the littoral zone.



Sections 13.0 through 13.4 & Appendix A – Special Basin Criteria: Sensitive Karst Areas and Location Description of SKAs



No revisions were made to Sections 13.0 through 13.4 or Appendix A which are related to the Special Basin Criteria for Sensitive Karst Areas within Northwest Florida.



Appendix B-2 – Detention with Filtration Criteria Check-List



Revisions to the criteria for Detention with Filtration include the following:

- Removal of the requirements for an impermeable liner to allow for the drawdown of the water table, (Item 1.b.).
- Removal of recommended design permeability rates, (Item 13).



Please make note that all detention with filtration systems at a minimum, are required to provide same treatment volume that is required for retention systems. Please refer to Section 5.2 ERP A.H. Vol. II for new treatment volume requirements.

Appendix C – Guidance for Evaluating Mines and Borrow Pit Activities



Revisions to the criteria for Evaluating Mines and Borrow Pit Activities include the following:

- Updated contact information for Mining and Mitigation Program.
- Provided links to additional rules related to Mines, Borrow Pits, and the Reclamation Requirements.
- Included language that referenced the borrow pit exemption (Subsection 62-330.051(17), F.A.C.).



Additional information about the Mining and Mitigation Program is available at: Department of Environmental Protection, Bob Martinez Center, 2600 Blair Stone Road, MS 3577, Tallahassee, Florida 32399-2400, 850-245-8336, and website

<https://floridadep.gov/Water/Mining-Mitigation>.

Additional information, such as applicable rules, may be found at:

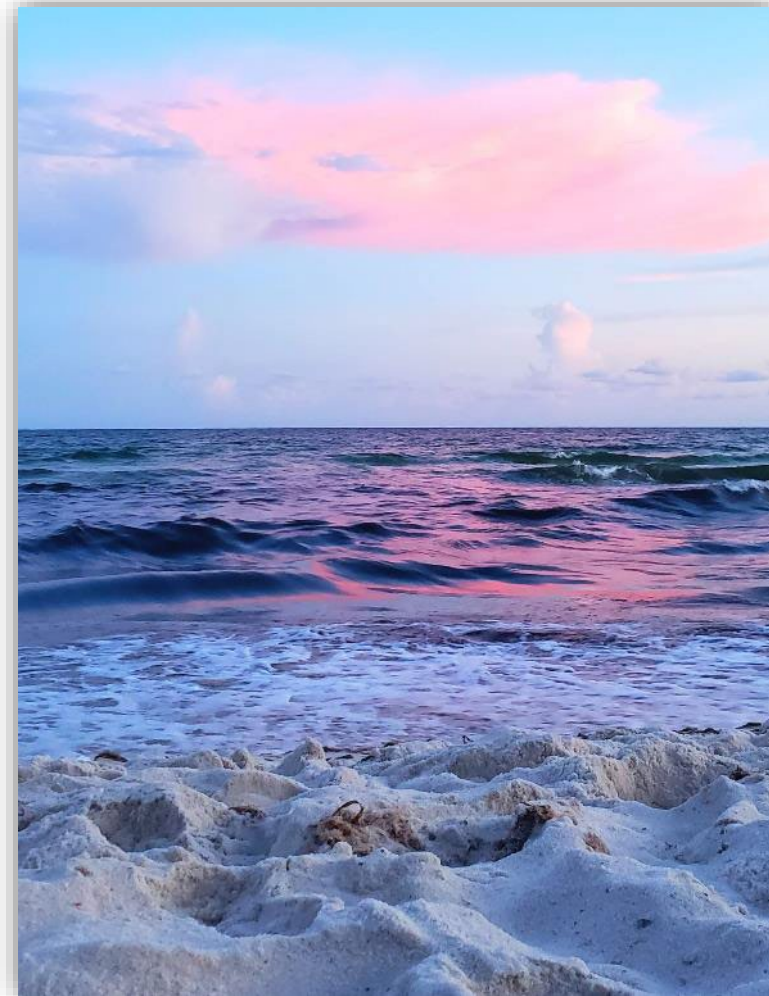
<https://floridadep.gov/water/water/content/water-resource-management-rules#Mining>

Appendix C – Guidance for Evaluating Mines and Borrow Pit Activities cont.



The following language was revised for more clarification:

If a pit is owned entirely by one person, surface water quality standards will not apply in the mine or borrow pit, except with respect to potential discharges to groundwater and to offsite waters. ~~As such, they may be appropriate for use within a future system for stormwater treatment and attenuation that serves development adjacent to the pit.~~ However, if the mine or borrow pit is intended to become a stormwater management system for future development, the system is required to meet the water quality standards listed under Part II of Volume I and Part IV of Volume II. A permit modification would be required to convert the system to a standard best management practice, calculate the projected pollutant loading of the future development, and demonstrate that the system has met the requirements of Section 8.3 and Section 9.0 of Volume I.



Revisions to the criteria for Evaluating Previously Permitted Projects and Stormwater Management Systems include the following:

- Inclusion of language for 2013 Rule changes and current Rule development.
- Revised dates of Rule implement for different portions of ERP and stormwater permitting in NW Florida.





The following language was removed under the Section where “no permit exists or can be located”:

~~Activities resulting in reduced impervious surface or reduced pollutant loading may, on a case-by-case basis, be exempted under Section 373.406(6), F.S. However, redevelopment activities that include demolition of an existing site resulting in a “bare earth” condition in preparation for new development must meet the requirements of Chapter 62-330 F.A.C. In such cases, the “pre-development” condition for purposes of the stream bank protection criteria in section 4.5 of this Volume shall be the “developed condition” prior to demolition. Review permit information and documents used to issue the original permit against the activity described.~~



This language was removed because portions of it was moved under Section 8.3.6 ERP A.H. Vol. I - Exemption from Minimum Performance Standards for Redevelopment. Certain types of redevelopment may be exempt from the new water quality standards.

Appendix E – Chapter 5 of the Florida Development Manual: A Guide to Sound Land and Water Management (June 1988)



This entire Appendix has been Removed!
The guidance within this appendix is presumptive based and will not longer be supported with the new minimum performance standards.





Only Part II of this Appendix Remains!
The guidance within this appendix is presumptive based and will not longer be supported with the new minimum performance standards.



References and Design Aids of ERP Applicant's Handbook Volume II



The primary information that was revised within the Design Aids were the Design Examples.





Section 1.0 - Methodology and Design Example for Retention Systems

Section 1.5 of the References and Design Aids of ERP A.H. Vol. II, which is the Design Example for calculating the recovery time for a Dry Retention System, was changed to remove the step for calculating the required volume. The treatment volume is now given in the example.

The following design example is for estimating retention basin recovery by hand utilizing the methodologies in **sections 1.3.3 and 1.3.5, above**.

Given: Commercial project discharging to Class III waters **Drainage area = 3.75 acres**

Required Treatment Volume = 6,807 ft³

Percent impervious = 40%

Off-site drainage area = 0 acres |

Off-line treatment

Step 1. Calculate the required treatment volume. For off-line retention, the rule requires retention of 0.5 inches of runoff.

$$0.5'' \text{ volume} = \frac{(3.75 \text{ ac})(0.5 \text{ in})(43560 \text{ ft}^2/\text{ac})}{12 \text{ in/ft}} = 6807 \text{ ft}^3$$

$$\text{Total treatment volume} = 6807 \text{ ft}^3$$

Section 2.0 - Methodology and Design Examples for Underdrain Systems



This entire Section has been removed! Please refer to the design criteria listed under Appendix B.





Section 3.0 - Methodology and Design Examples for Wet Detention Systems

Section 3.5 (now Section 2.5) of the References and Design Aids of ERP A.H. Vol. II for calculating the sizing of the draw down device design for recovery of a wet detention system, was changed to remove the step for calculating the required volume and some of the language referring to 50 percent additional permanent pool volume.

Design Example

Given:

Residential development in Crawfordville, Wakulla County
Class III receiving waters

~~Project area = 100 acres; Project runoff coefficient = 0.35~~

~~Project percent impervious (not including pond area) = 30%~~

~~Off-site drainage area = 10 acres; Off-site percent impervious = 0%~~

~~Off-site runoff coefficient = 0.2~~

Required Treatment Volume = 9.17 ac - ft

Average on-site groundwater table elevation at the proposed lake = 20.0 ft

Design tailwater elevation = 19.5 ft

Pond area at elevation 20.0 ft = 5.0 acres

No planted littoral zone proposed; ~~50% additional permanent pool required~~

Design Calculations:

~~Step 1. Calculate the required treatment volume. The agency requires a treatment volume of 1 inch of runoff.~~

$$\text{Treatment volume required} = \frac{(110 \text{ ac.})(1 \text{ inch})}{12 \text{ in/ft}} = 9.17 \text{ ac-ft}$$

~~(one inch of runoff)~~

$$\text{Treatment volume} = 9.17 \text{ ac-ft}$$

Step 32. Calculate the minimum permanent pool volume that will provide the required residence time. The permanent pool must be sized to provide a residence time of at least 21 days (14 days plus 50% additional) during the wet season (June - September), to account for the design with no planted littoral zone.

Section 4.0 - Methodology and Design Examples for Swale Systems



This entire Section has been removed! Please refer to revised language under Section 9.0 ERP A.H. Vol. II.



Section 5.0 - Methodology and Design Examples for Stormwater Harvesting Systems



Only minor grammatical/clerical edits were addressed under Section 5.0 (now Section 3.0) for Methodology and Design Examples for Stormwater Harvesting Systems.



Section 6.0 - Methodology and Design Examples for Vegetated Natural Buffers



No changes are
proposed within this
Section!



Section 7.0 – Guidance for Stormwater Management System Retrofit Activities



This entire Section has been removed due to the information being duplicative of what is under Section 2.8 (now Section 2.7) ERP A.H. Vol. II.



Section 8.0 – Flexibility for State Transportation Projects and Facilities



This entire Section has been removed due to the information being duplicative of what is under Section 2.10 (now Section 2.8) ERP A.H. Vol. II.



Questions and Wrap Up



- Questions/Comments?
- Please submit any additional comments, suggested edits and recommendations to Stormwater2020@FloridaDEP.gov.
- Revisions are ongoing to the ERP A.H. Vol. II, Appendices, and References and Design Aids which are based on your comments. Therefore, we will continue to encourage and accept comments throughout the entire rulemaking process.



<https://floridadep.gov/water/water/content/water-resource-management-rules-development#erp-sw>

Thank You



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