



# NOTICE

**NOTICE #:** 23-03    **NOTICE RELEASE DATE:** 03/30/2023    **CONTACT:** Andy Balchin, P.E.: 240-435-5720  
[BalchinA@CharlesCountyMD.gov](mailto:BalchinA@CharlesCountyMD.gov)

## CLARIFICATION OF SUBMERGED GRAVEL WETLAND REQUIREMENTS

All information stated in the 2000 Maryland Stormwater Design Manual Volumes 1 & 2 (MDSDM) remains in effect, except the following:

- The stipulation that the only statements in italicized font are requirements. All information in the MDSDM can be required for the design of stormwater management (SWM) facilities regardless of their font style.
- Maximum drainage area to Submerged Gravel Wetland (SGW) shall not be more than 10 acres.

The following information can be found in the MDSDM, but the Infrastructure Management (IM) division of Planning and Growth Management (PGM) feel it requires some clarification:

- Implementation of a SGW on a site should not compromise the intent of Environmental Site Design (ESD) to the Maximum Extent Practical (MEP). An SGW should not be favored to eliminate the use of other ESD opportunities. Also, because an SGW needs saturated water conditions, it should be used exclusively on hydrologic soil groups C or D, or places with a high groundwater table. Similarly, projects with A or B hydrologic soils need to implement practices that promote natural infiltration such as landscape infiltration. A design is called ESD to the MEP by the use and distribution of appropriate small-scale practices throughout the site.
- All embankments designed to impound water, including Chapter 5 micro-scale devices with a drainage area greater than 0.5 acres, must be screened for Code 378 requirement. These facilities must be designed accordingly and constructed in accordance with Pond Code MD 378 or Chapter 3 of the Manual as appropriate. Review and approval of facilities requiring MD 378 approval will be performed by Charles Soil Conservation District. The small pond flow chart is required.
- The SWM facility shall be designed based on the area draining to the device.
- The maximum ponding for Environmental Site Design Volume (ESDv) in a SGW shall be limited to 2 feet maximum.

(CONTINUED)

- A minimum 6 inches of freeboard is required in all facilities unless otherwise specified as a result of the small pond flow chart.

The design of a SGW shall, also, adhere to the following requirements taken from the document titled, "Clarification on submerged gravel wetland (SGW) design for State and federal projects," dated June 27, 2014.

1. Groundwater

- a. The best suited in areas are where a high-water table or poorly drained soils are present, HSG C or D.
- b. The outlet control shall be at least 6 inches above the seasonally high groundwater elevation to avoid drawing down groundwater elevations.
  - i. The outlet is considered the critical point located 4 inches below the surface.
- c. The groundwater elevation should be within a foot of the bottom of the SGW, or liner shall be provided.
- d. If a site is considered a hot spot or it is necessary to maintain submerged conditions in the facility a liner may be required. For sites that are not a hot spot, recharge will need to be provided elsewhere if liner is proposed.

2. Landscaping

- a. The plan should show the location, number of plants, and plant species.
- b. A minimum of three different types of wetland species shall be provided.

3. Layout

- a. The length to width ratio (L:W) shall be between 1:1 to 1:2.
  - i. The flow path through the SGW is referred to as the length.
  - ii. The length is considered from inflow to outflow.
- b. The flow length along the gravel media shall be at least 15 feet.
- c. The width is the dimension perpendicular to the length and is the distance over which the inflow is dispersed.
- d. The width shall not exceed 100 feet.
- e. Multiple treatment "cells" may be used for meeting the L:W ratio.

4. Outlet

- a. The outlet to the facility shall be a hardened structure or armored weir (grass not allowed).
- b. The control point for the outlet shall be set at 4 inches below the surface of the facility.

- i. The orifice needs to be sized to discharge the surface storage volume over 36 hours (more than 36 hours).
  - 1. The dewatering computation method included in Appendix D.11 should not be utilized, this is for 12 to 24 hours.
- c. The outlet control shall be at least 6 inches above the seasonally high groundwater elevation to avoid drawing down groundwater elevations.
  - i. The outlet is considered the sub drain invert elevation or the first opening where water will leave the SGW.

5. Pre-Treatment

- a. Pre-treatment is not required for drainage areas less than 20,000 sf.
- b. Pre-treatment is required for 10% of the total ESDv for the area draining to the facility.
- c. Pre-treatment shall be provided in a forebay or a blind swale.
- d. The forebay shall be designed to be dry between storm events.

6. Ponding and Subsurface Facility Layers

- a. The maximum allowable ponding depth for the 1-year storm is 2 feet.
- b. Temporary storage for 75% of ESDv for the drainage area contributing to the wetland shall be provided above the surface of the planting soil and gravel bed.
  - i. Calculation for ESDv should be the ponding above the surface of the wetland plus the volume provided in the forebay and then divided by the 75% (assuming you are meeting the 75% surface storage requirement above) to count towards the ESDv.
- c. The gravel substrate shall be at least 2 feet thick but no thicker than 4 feet.
- d. The soil layer shall be a minimum of 8 inches thick and shall not be included in either the surface storage volume computations.
- e. If for some justifiable reason, the area of the substrate is smaller than the surface area, the substrate shall be sized to store a minimum of 40% of the ESDv calculated based on the drainage area to the facility.
  - i. If the forebay is significantly larger than 10% then the designer shall demonstrate that 40% of the ESDv can be provided below the surface of the SGW.

7. Miscellaneous

- a. The side slopes shall be 2:1 or flatter.

- b. The SGW will meet recharge requirements unless a liner has been provided.
- c. An observation well consisting of an anchored, six-inch diameter perforated pipe is required. The top of the observation well should be at least six inches above grade.
  - i. If multiple cells are present an observation well should be provided in each cell of the wetland.
- d. Liners shall be constructed of 6-12 inches of clay or 30 mil polyethylene.
- e. A pipe chimney or gravel window must be provided to allow the ESDv to flow into the submerged gravel layer. The Chimney or window into the SGW shall be a minimum of 15 feet by no more than 50 feet from the outlet pipes.
  - i. If windows are linear strips – they should be approximately at least 2 feet wide.
  - ii. If wetland surface does not require cells based on the L:W ratio, a square window can be provided.
  - iii. If pipe chimneys are provided, they are a considered distribution pipe and should be perforated.
    - 1. Pipe chimney laterals should not be connected to collection drains/sub-drain.
- f. Geotextile shall be provided along all vertical interfaces between different types of media and in-situ soils to prevent collapse of the layer with smaller particles into the voids of the layer with the larger particles. The use of geotextile is prohibited on horizontal layers.

The requirements set forth in this PGM Notice will not apply to any construction proposed pursuant to a valid permit issued prior to the Notice Release Date of this notice or any projects that are currently being reviewed for a development services permit (DSP). All current and future concept and site stormwater management plans shall adhere to the requirements outlined in this notice.

These changes will be effective on the release date of this notice.

Please contact Andy Balchin, P.E., Chief of Infrastructure Management, at 240-435-5720 or [BalchinA@CharlesCountyMD.gov](mailto:BalchinA@CharlesCountyMD.gov) for any questions or clarifications regarding this determination.

Those citizens with special needs, please contact the Charles County Department of Planning and Growth Management, voice phone number (301)645-0540 or Maryland Relay Service TDD 1-800-735-2258.