SEDIMENT BASINS
and CODE 378
plus a few other things...

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Photo source: MDE SSDS
When is 378 small pond approval required for a sediment basin?
G-2 Standard and Specifications for Sediment Basins

G-2 STANDARD AND SPECIFICATIONS FOR
SEDIMENT BASINS

Definition
A temporary pond formed by excavation and/or construction of an embankment and equipped with a drawdown device.

Purpose
To intercept sediment-laden runoff and retain sediment in order to protect drainage ways, properties, and rights-of-way downstream of the sediment basin from sedimentation.

Conditions Where Practice Applies
A sediment basin is required where sediment trap drainage areas are exceeded. Stormwater management ponds may be used as sediment basins provided they meet the requirements of this section and that the construction sequence addresses converting the sediment basin to the permanent stormwater management pond.

Conditions of Use
This standard applies to the installation of temporary sediment basins on sites where:

1. Failure of the structure would not result in loss of life, damage to homes or buildings, or interruption of use or service of public roads or utilities;

2. The drainage area does not exceed 100 acres;

3. The maximum embankment height does not exceed 15 feet measured from the natural ground to the embankment top along the centerline of embankment; and

4. The basin is to be removed within 36 months after the beginning of construction of the basin.

Where any of these criteria cannot be met, the structure must be designed in accordance with environmental Article, Title 8, Subtitle 6, Annotated Code of Maryland or Natural Resource Conservation Service (NRCS) Maryland Conservation Practice Standard Code No. 378 for Ponds.

Design Criteria
1. Local Requirements. In addition to the requirements herein, the design and construction must comply with local laws, ordinances, rules and regulations.

2. Stormwater Management. Where a sediment basin is to be used as a permanent pond, the total volume must be equal to or exceed the capacity requirements for the permanent pond or provisions must be made for additional grading when the facility is converted to a permanent structure.

3. Location. Locate the basin to obtain the maximum storage benefit from the terrain, and for ease of drainage. The basin should be located to avoid conflicts with utilities and construction activities. Where possible, locate so that storm drains may outfall or be diverted into the basin. Do not locate...
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Sediment Basins and 378 Small Pond Approval

A. A sediment basin embankment that is to be used for more than 36 months does not need to be designed in accordance with Code 378 if the temporary and permanent embankments are both smaller than Code 378 size.

B. A sediment basin embankment that is Code 378 size needs to be designed in accordance with Code 378 even if, prior to 36 months, it is converted to a permanent SWM pond that has an embankment smaller than 378 size. A dam breach analysis is not required.

C. An embankment that is Code 378 size in either sediment control mode or permanent stormwater management mode must be designed in accordance with Code 378 and approved prior to constructing the sediment basin. A dam breach analysis is required for the more hazardous of the two operation modes.

D. A temporary sediment basin embankment that is to be used for more than 36 months needs to be designed in accordance with Code 378 and approved if the embankment is Code 378 size. A dam breach analysis is required.

E. A sediment basin embankment that exceeds Code 378 size or has a hazard class of significant or high must obtain a permit from the Dam Safety Division even if temporary. A dam breach analysis is required.
What do with Code 378 size sediment basins that were intended to be temporary but end up being permanent for whatever reason?

old timer →

NOW WHAT?!
The take away....

- Code 378 approvals for the embankment need to be issued for both sediment control and stormwater modes, as applicable.

- Code 378 approval for a sediment basin needs to be based on the temporary conditions, but it advisable to also provide the final stormwater management design for review and approval at the time of sediment basin approval.

- Preventative measures need to be taken to keep temporary Code 378 size sediment basins from remaining in the ground for more than 36 months. When in doubt, require basin to be designed and constructed in accordance with Code 378.
CONSTRUCTION INSPECTIONS FOR 378 SEDIMENT BASINS

- Certifying engineer or representative needs to be on site during construction of embankment and spillway.
- Geotechnical testing is needed for soil classification.
- Require a construction inspection checklist and photos. Inform developer of as-built requirements.
- Avoid disjointed inspections. Establish which agency is responsible for inspections.
- Construction inspection documentation required for as-built acceptance.
Sizing Criteria for Sediment Basins

- Minimum storage volume of 3600 cf/ac (1800 cf/ac “wet” and 1800 cf/ac “dry”)
- Minimum surface area to discharge ratio of 0.0035
- Minimum flow L:W ratio between inflow and outflow of 2:1
- 10-year conveyance and minimum freeboard above 10-year WSEL (1 ft freeboard with auxiliary spillway; 2 ft freeboard without auxiliary spillway)

Sizing Criteria for **Code 378** Sediment Basins

- Same as above except design storm for conveyance and freeboard is **100-year** instead of 10-year.
Evaluation of Current Sizing Criteria

- Minimum storage volume of 3600 cf/ac (1800 cf/ac “wet” and 1800 cf/ac “dry”)

- Controlling Discharge Rates during Construction (Interim Conditions)

\[ Q_{\text{pre}} = 10 \text{ cfs} \quad Q_{\text{during}} = ?? >> 10 \text{ cfs} ?? \quad Q_{\text{post}} = 10 \text{ cfs} \]
TRAP vs. BASIN

**G-1 SEDIMENT TRAPS**
- ST-I: H ≤ 5 ft
- ST-II and ST-III: H ≤ 4 ft

**G-2 SEDIMENT BASINS**
- no height limitation
- except DS permit required for H ≥ 20 ft

Photo source: MDE SSDS
Converting a Sediment Control Basin to Stormwater Management Facility

- Raising or lowering the embankment
- Performing grading to give pond its final shape
- Adding forebays, underdrain systems, media, plantings, etc.
- Modifying the riser
- Removing the draw down device

ESC plan of sediment basin

SWM plan of permanent 378 pond

Photo source: MDE SSDS
Sediment Basins in Use III Watersheds

Sediment basins in Use III watersheds are not regulated, but if you find yourself reviewing a project that is located in a very sensitive area, please consult with DNR’s Environmental Review Program.
After exhausting all possible traditional sediment control measures including redundant controls, chemical additives may be used to reduce the turbidity of effluent from a sediment basin or trap.

Sediment Basins and Flocculants

The new “20-CP” permit will address the use of chemical additives or polymers to reduce turbidity.

- The permit includes a pre-approved list of products to increase efficiency.
- For products not on the approved list, there is a required method of review established to evaluate potential toxicity of the product.
- The product may be accepted by the MDE and added to the product list after the review.
- Cationic polymers require an additional review with residual testing.
- A SWPPP (stormwater pollution prevention plan) is required for the site for projects using chemical additives or polymers for sediment control.

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Link to webpage: https://mde.maryland.gov/programs/water/wwp/Pages/gp_construction.aspx
Questions should be directed to Paul Hlavinka, MDE, WSA, Industrial Stormwater Permits Division at Paul.Hlavinka@Maryland.gov.
Thank you

Questions?

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