



DAM SAFETY
POLICY MEMORANDUM #16

TO: Dam Owners, Operators, and Engineers

FROM: Stormwater, Dam Safety, and Flood Management Program
Water and Science Administration

DATE: December 21, 2022

SUBJECT: Geosynthetics in Dam and Small Pond Embankments

Policy Statement

It is the policy of the Maryland Department of the Environment (the Department) that the design of dam embankments must consider potential failure modes and incorporate defensive design measures as appropriate. The Department has observed occasional use of geotextiles in filter and drain design contrary to industry best practices, as well as a number of retrofit projects where geomembranes are used as impervious barriers. This policy seeks to clarify the acceptable use of geosynthetics (e.g., geotextiles and geomembranes) in dam and small pond embankments.

General

In accordance with the policy of the National Dam Safety Review Board, geotextiles shall not be used in locations that are critical to the safety of the dam. Accordingly, geotextiles shall not be used within the structure of the dam for internal filters, drains, material separation, or for any other purpose or any location where access or inspection requires excavation into the embankment or where poor performance could lead to failure of the dam.

For reference, the terms geosynthetic, geotextile, geogrid, geomembrane, geocomposite, and geosynthetic clay liner are defined in the [Recommended Descriptions of Geosynthetics Functions, Geosynthetics Terminology, Mathematical and Graphical Symbols](#), 5th Edition September 2009 published by the International Geosynthetics Society.

Acceptable use of Geosynthetics

- Geotextiles may be used for separation between riprap and underlying soils on the upstream face of the dam, downstream face of the dam, along groins, and plunge pools.
- With prior approval from the Department, designs may employ the use of geosynthetics or geogrids to improve slope stability in embankment rehabilitation if factors of safety without the geosynthetic are ≥ 1.1 and are within 10 percent of the required factors of safety.

- Geotextiles and geocomposites may be used as a cushion between geomembranes and underlying soils.
- Geomembranes and geosynthetic clay liners may be used to line ponds/reservoirs to provide an impervious barrier provided appropriate quality control testing is provided. Designers must provide a specification for the materials and the quality control testing as part of the design. Review [NRCS Conservation Practice Standard 521, Pond Sealing or Lining – Geomembrane or Geosynthetic Clay Liner](#) for minimum design requirements.
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Additional Information

Questions about this policy or other items relating to ponds and dams can be directed to the Chief of the Dam Safety Permits Division at 410-537-3552. Additional suggested guidance documents include but are not limited to the following:

- International Geosynthetics Society: <https://www.geosyntheticssociety.org/>
- Geosynthetic Institute: <https://geosynthetic-institute.org/>
- USBR Design Standards No. 13, Embankment Dams, Chapter 19, Geotextiles
- NRCS TR-60, Earth Dams and Reservoirs, March 2019
- FEMA, Geotextiles in Embankment Dams, Status Report on the Use of Geotextiles in Embankment Dam Construction and Rehabilitation, April 2008