

7400 Watershed Assessment Section

7406 TMDLs for Nutrients for the Nanticoke River And Broad Creek

1.0 Introduction and Background

- 1.1 Intensive water quality monitoring performed by the Department of Natural Resources and Environmental Control (DNREC) and studies performed by others have shown that the Nanticoke River and Broad Creek are highly enriched with the nutrients nitrogen and phosphorus. Although nutrients are essential elements for both plants and animals, their presence in excessive amounts cause undesirable conditions. Symptoms of nutrient enrichment in the Nanticoke River and Broad Creek have included frequent phytoplankton blooms and large daily swings in dissolved oxygen levels. These symptoms threaten the future of the Nanticoke River Subbasin - very significant natural, ecological, and recreational resources of the State.
- 1.2 A reduction in the amount of nitrogen and phosphorous reaching the Nanticoke River and Broad Creek is necessary to reverse the undesirable effects. These nutrients enter the rivers from point sources and nonpoint sources. Point sources of nutrients are end-of-pipe discharges coming from municipal and industrial wastewater treatment plants and other industrial uses. Nonpoint sources of nutrients include runoff from agricultural and urban areas, seepage from septic tanks, and ground water discharges.
- 1.3 Section 303(d) of the Federal Clean Water Act (CWA) requires States to develop a list (303(d) List) of waterbodies for which existing pollution control activities are not sufficient to attain applicable water quality criteria and to develop Total Maximum Daily Loads (TMDLs) for pollutants of concern. A TMDL sets a limit on the amount of a pollutant that can be discharged into a waterbody and still protect water quality. TMDLs are composed of three components, including Waste Load Allocations (WLAs) for point source discharges, Load Allocations (Las) for nonpoint sources, and a Margin of Safety (MOS).
- 1.4 DNREC listed the Nanticoke River and Broad Creek on the State's 1996 and 1998 303(d) Lists and proposes the following Total Maximum Daily Load regulation for nitrogen and phosphorous.

2.0 Total Maximum Daily Loads (TMDLs) Regulation for the Nanticoke River and Broad Creek, Delaware

- Article 1. Biological Nutrient Removal (BNR), or equivalent, processes shall be employed in three large municipal wastewater treatment plants in the Nanticoke River and Broad Creek Sub-basin. These three facilities include Seaford Sewage Treatment Plant, Bridgeville Sewage Treatment Plant, and Laurel Sewage Treatment Plant. This shall result in reducing nitrogen load from these three facilities from the current permitted load of 199 kilograms per day (439 pounds per day) to 100 kilograms per day (221 pounds per day). Reduction of phosphorous loads from these three facilities will be from the current permitted load of 33 kilograms per day (73 pounds per day) to 25 kilograms per day (55 pounds per day).
- Article 2. For the remaining wastewater treatment plants in the watershed, discharge of nitrogen and phosphorous loads shall be capped at their current permitted loads. These loads are 568 kilograms per day (1252 pounds per day) of nitrogen and 1.0 kilograms per day (2.2 pounds per day) of phosphorous.
- Article 3. The nonpoint source nitrogen load to the Nanticoke River and Broad Creek shall be reduced by 30 percent (from the 1992 base-line). This shall result in reduction of nitrogen

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loads during a normal rainfall year from 2274 kilograms per day (5013 pounds per day) to 1723 kilograms per day (3799 pounds per day).

Article 4. The nonpoint source phosphorus load to the Nanticoke River and Broad Creek shall be reduced by 50 percent (from the 1992 base-line). This shall result in reduction of phosphorous loads during a normal rainfall year from 54 kilograms per day (119 pounds per day) to 36 kilograms per day (79 pounds per day).

Article 5. Based upon hydrodynamic and water quality model runs and assuming implementation of reductions identified by Articles 1 through 4, DNREC has determined that, with an adequate margin of safety, water quality standards will be met in the Nanticoke River and Broad Creek.

Article 6. Implementation of this TMDL Regulation shall be achieved through development and implementation of a Pollution Control Strategy. The Strategy will be developed by DNREC in concert with the Department's ongoing Whole basin management Program and the affected public.

2 DE Reg. 1006 (12/01/98)