DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF WATERSHED STEWARDSHIP

Statutory Authority: 7 Delaware Code, Chapter 60; (7 **Del.C.**, Ch. 60)
7 **DE Admin. Code** 7408

FINAL

Secretary's Order No. 2014-WS-0018

7408 TMDLs for Nutrients for the Murderkill River Watershed

Date of Issuance: September 2, 2014
Effective Date: October 11, 2014

Under the authority vested in the Secretary of the Department of Natural Resources and Environmental Control ("Department" or "DNREC") under 29 **Del.C.** §8001 et seq., 29 **Del.C.** §10111 et seq. and 7 **Del.C.** §6010(a), the following findings, reasons and conclusions are entered as an Order of the Secretary to amend the regulation, 7 **DE Admin. Code** 7408, Total Maximum Daily Loads (TMDLs) for the Murderkill River Watershed (Regulation 7408). The attached Hearing Officer's Report (Report) reviews the record and recommends approval of the proposed amendment. The Report is adopted to the extent it is consistent with this Order.

The Department's Division of Watershed Stewardship, Watershed Assessment Management Section (WAMS), prepared the proposed amendment following years of study and research on the Murderkill River's water quality. The research and studies followed the prior Regulation that established TMDLs, but this regulation was challenged in court by an appeal taken by Kent County, which operates a waste water treatment plant that discharges into the Murderkill River. The court appeal was settled based upon the Department and Kent County undertaking addition water quality studies. These studies concluded that the tidal marshlands along the Murderkill River warranted different TMDLs than previously approved. Accordingly, based upon the site specific studies, considerable research and the opinion of the Department's experts in WAMS, the amendment reflects better information than was available when the Department last established the TMDLs. Consequently, the changes to the TMDLs reflect what the prior TMDLs would have been if the same degree of study was undertaken of site specific conditions, namely the tidal marshlands along the Murderkill River beginning at the Route 1 bridge near Frederica and ending at the Delaware Bay.

The TMDLs adopted by this Order are based upon sound scientific evidence, are consistent with state and federal law, and are a reasoned exercise of the Department's authority to issue regulations to improve water quality. The TMDLs will limit the release of harmful levels of nutrients and allow the Murderkill River's water quality to improve to reach the federal and state water quality standards.

In conclusion, the following findings and conclusions are entered:

1. The Department, acting through this Order of the Secretary, adopts the proposed regulations as final regulations, as set forth in the Appendix A to the Report, under 29 **Del.C.** §6010(a);

2. The approval of the proposed regulations as final regulations will protect and improve the water quality within the watershed. The TMDLs, as regulations, will allow the Department to take such actions to control the release of pollutants that impair the water quality from meeting the water quality standards;

3. The TMDLs approved by this Order were developed consistent with the applicable law and regulatory standards, and are supported by expert technical analysis;

4. The Department provided adequate public notice of the proceeding and the public hearing in a manner required by the law and regulations, held a public hearing in a manner required by the law and regulations, and considered all timely and relevant public comments in making its determination;

5. The Department's proposed amendment to Regulation 7408, as published in the April 1, 2014, Delaware *Register of Regulations*, and as set forth in Appendix A to the Report, are adequately supported, not arbitrary or capricious, are consistent with the applicable laws and regulations, and should be approved as a final regulation to go into effect ten days after their publication in the next available issue of the Delaware *Register of Regulations*; and that;

6. The Department shall provide notice to the persons affected by the Order consistent with applicable laws and regulations.

David S. Small, Secretary

7408 TMDLs for Nutrients for the Murderkill River Watershed

1.0 Introduction and Background

1.1 Intensive water quality monitoring performed by Delaware Department of Natural Resources and Environmental Control (DNREC) has shown that the waters of the Murderkill River and several of its tributaries and ponds are impaired as the result of low dissolved oxygen and high nutrients. Low concentrations of dissolved oxygen are harmful to fish, shellfish, and other aquatic life. With regard to nutrients (nitrogen and phosphorus), although they are essential elements for both plants and animals, their presence in excessive amounts causes undesirable conditions. Symptoms of nutrient overenrichment include frequent phytoplankton blooms, decreased water clarity, dissolved oxygen deficiency, alteration of composition and diversity of economically important native species of plants and animals, and possible human health effects.

1.2 A reduction in the amount of nutrients and oxygen consuming pollutants reaching the waters of the Murderkill River and its tributaries and ponds is necessary to reverse these undesirable impacts. These pollutants and nutrients enter the waters of the Murderkill River from point sources and nonpoint sources. Point sources are end-of-pipe discharges from municipal or industrial wastewater treatment plants. Nonpoint sources include runoff from agricultural and urban areas, septic tank effluent, 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) to account for uncertainties and future growth.

1.4 DNREC listed the Murderkill River and several of its tributaries and ponds on the Delaware's 1996, 1998, and 2000 303(d) Lists and ~~proposes the following~~ developed and promulgated a Total Maximum Daily Load regulation for nitrogen, phosphorous, and 5-day Carbonaceous Biochemical Oxygen Demand (CBOD5) in 2005.

1.5 Since the promulgation of the 2005 TMDLs, a multi-year monitoring, research, and modeling study of Murderkill River Watershed by DNREC and other cooperating agencies and institutions concluded that new scientifically-based, site-specific dissolved oxygen criteria should be adopted for the tidal Murderkill River. This amendment of the 2005 TMDLs is to comply with this proposed site-specific dissolved oxygen criteria for the tidal Murderkill River.

2.0 Total Maximum Daily Loads (TMDLs) Regulation for the Murderkill River Watershed, Delaware

Article 1. The total nitrogen waste load from the Kent County Facility ~~and Canterbury Crossing Mobile Home Park~~ shall be limited to ~~755.3~~ 897 pounds per day. ~~The waste load allocation for the Kent County Facility will be 751 pounds per day and for Canterbury Crossing Mobile Home Park will be 4.3 pounds per day.~~ This load shall be expressed as annual average load in the National Pollutant Discharge Elimination System (NPDES) Permit for this facility.

Article 2. The total phosphorus waste load from the Kent County Facility ~~and Canterbury Crossing Mobile Home Park~~ shall be limited to ~~62.7~~ 51 pounds per day. ~~The waste load allocation for the Kent County Facility will be 62.5 pounds per day and for Canterbury Crossing Mobile Home Park will be 0.2 pounds per day.~~ This load shall be expressed as annual average load in the NPDES Permit for this facility.

Article 3. The CBOD5 (5-day Carbonaceous Biochemical Oxygen Demand) waste load from the Kent County Facility ~~and Canterbury Crossing Mobile Home Park~~ shall be limited to ~~1010.6~~ 544 pounds per day. ~~The waste load allocation for Kent County Facility will be 1001 pounds per day and for Canterbury Crossing Mobile Home Park will be 9.6 pounds per day.~~

~~**Article 4.** Treated wastewater from the City of Harrington wastewater treatment facility shall be used for spray irrigation. However, during the winter season, as well as during wet weather periods, when spray irrigation of treated wastewater is not practical, the effluent may be discharged into Browns Branch. During periods of surface discharge, the maximum discharge flow rate shall not exceed 750,000 gallons per day and daily waste loads shall not exceed 140 pounds per day for total nitrogen, 0.75 pounds per day for total phosphorus, and 37.5 pounds per day for CBOD5. Furthermore, the total annual waste load discharged from the City of Harrington wastewater treatment facility to the surface waters of Browns Branch shall not exceed 9125 pounds per year for total nitrogen, 55 pounds per year for total phosphorus, and 3000 pounds per year for CBOD5.~~

Article ~~5~~4. The nonpoint source nitrogen load in the entire watershed shall be reduced by 30 percent (from the ~~1997~~ 2007-2008 base-line). This shall result in a yearly-average total nitrogen load of ~~560~~ 972.6 pounds per day.

Article ~~6~~5. The nonpoint source phosphorus load in the entire watershed shall be reduced by 50 percent (from the ~~1997~~ 2007-2008 base-line). This shall result in a yearly-average total phosphorous load of ~~96~~ 12.1 pounds per day.

Article ~~7~~6. Based upon hydrodynamic and water quality model runs and assuming implementation of reductions identified by Articles 1 through ~~6~~5, DNREC has determined that, with an adequate margin of safety, water quality standards and nutrient targets will be met in the Murderkill River and its tributaries and ponds.

~~**Article 8.** 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 Murderkill River Tributary Action Team, other stakeholders, and the public.~~

8 DE Reg. 1722 (06/01/05)
18 DE Reg. 316 (10/01/14) (Final)