

**DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL  
DIVISION OF WATER RESOURCES**

Statutory Authority: 7 Delaware Code, Chapter 60 (7 Del.C. Ch. 60)

**FINAL**

**ORDER No. 2005-W-0025**

**7408 TMDLs for the Murderkill River Watershed**

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 in the above-referenced rulemaking proceeding.

In Secretary’s Order No. 2001-A-0044, issued November 15, 2001, the Department promulgated a final regulation for Total Maximum Daily Loads (“TMDLs”) for the Murderkill River watershed (“2001 TMDLs”). Kent County Levy Court (“Kent County”) appealed the regulation to the state Environmental Appeals Board and Superior Court. The Department agreed to stay the regulation’s application to Kent County’s wastewater treatment facility pending the outcome of the appeals, and entered into settlement negotiations to resolve the dispute. The negotiations resulted in two agreements with Kent County, the collection of new water quality data, and refinements to the model used to establish the 2001 TMDLs. Based upon the refined model, the Department held a public workshop on August 12, 2004 to review and hear comments on the changes to the TMDLs that it would be proposing. The proposed regulation to amend the TMDLs was published in the *Delaware Register of Regulations* on March 1, 2005.

Based on the record, including the public hearing record reviewed in the May 11, 2005 Hearing Officer’s Report (“Report”) appended hereto, the proposed regulation is adequately supported and is not arbitrary or capricious. The Report reviews and summarizes the public hearing record, which was developed at the April 7, 2005, public hearing. The Report recommends approval of the proposed regulation as a final regulation without modification. I agree with the Report and adopt it as part of this Order along with its reasons.

The proposed regulation is based upon sound scientific evidence, is consistent with state and federal law, and is a reasoned regulation that will result in improved water quality within the Murderkill River watershed. The improvements will occur through the TMDLs, which will require nonpoint sources to reduce nitrogen by 30% and phosphorous by 50% from their 1997 base line levels. The TMDLs also will require limits on the three point sources that discharge directly into the waters through stream discharge permits. The proposed TMDLs reflect changes since 2001, such as the elimination of one point source, and the future move by the City of Harrington’s wastewater treatment plant away from a direct water discharge and to spray irrigation of its treated wastewater effluent. The TMDLs also result in the resolution of Kent County’s appeals, which will allow the TMDLs to apply to the Kent County wastewater treatment plant. Accordingly, the proposed TMDLs should be approved as a final regulation.

The Report discusses the comments submitted by the Mid-Atlantic Environmental Law Clinic. These comments, if adopted, would result in a significant delay in the establishment of amended TMDLs. The proposed regulation reflects a reasonable regulation that should be approved now as it represents a clear improvement over the 2001 TMDLs. The Department has collected updated data and reflected it in a revised model used to evaluate the water quality of the Murderkill River, particularly the lower portion that is influenced by tidal waters. Nothing in the comments supports the further delay. The comments, including Kent County’s, may be appropriate for consideration as part of the Department’s ongoing regulation of the Murderkill River watershed’s water quality. In conclusion, the following findings and conclusions are entered:

1. The Department, acting through this Order of the Secretary, adopts the proposed regulation as a final regulation, as set forth in the Appendix B to the Report, under 29 Del.C. §6010 (a) and pursuant to the federal Clean Water Act, 33 U.S.C §1251 *et seq.* and the United States Environmental Protection Agency’s regulations pursuant to the Clean Water Act;
2. The issuance of the proposed regulation as a final regulation will protect and improve the water quality of the Murderkill River watershed, as defined by elevation maps, and allow the Pollution Control Strategy to be developed for the Murderkill River watershed;
3. The issuance of the proposed regulation as a final regulation will allow the appeal of the existing TMDLs by Kent County to be resolved and allow TMDLs to apply to the Kent County wastewater treatment plant that are acceptable to Kent County and will avoid further appeals;

4. The TMDLs that are approved by this Order were developed consistent with the applicable law and regulatory standards and are adequately supported by technical analysis;

5. 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;

6. The Department's proposed regulation, as published in the March 1, 2005, *Delaware Register of Regulations* and set forth in Appendix B to the Report, is adequately supported, not arbitrary or capricious, is consistent with the applicable laws and regulations, and should be approved as a final regulation to go into effect ten days after its publication in the next available issue of the *Delaware Register of Regulations*; and that;

7. The Department shall provide written notice to the persons affected by the Order, as determined by those who participated in this rulemaking at either the public workshop or at the public hearing, including participation through the submission of written comments.

John A. Hughes, Secretary  
Department of Natural Resources and Environmental Control

Date of Issuance: **May 12, 2005**

Effective Date: **June 11, 2005**

### **Introduction and Background**

On December 2001, the Cabinet Secretary of the Delaware Department of Natural Resources and Environmental Control (DNREC) issued Order No. 2001-A-0044 adopting a Total Maximum Daily Loads (TMDLs) Regulation for nutrients and oxygen consuming compounds for the entire Murderkill River Watershed. The TMDLs, which are developed in compliance with requirements of Section 303(d) of the Clean Water Act (CWA), establish maximum amounts of pollutants that can be discharged to a waterbody from point and nonpoint sources while maintaining water quality standards. The TMDLs include Waste Load Allocations (WLAs) for point sources, Load Allocations (LAs) for nonpoint sources, and a Margin of Safety (MOS).

Following adoption of the Murderkill River TMDLs Regulation in December 2001, Kent County Levy Court, which owns and operates the Kent County Facility, appealed the TMDLs Regulation for the lower Murderkill River to the State Environmental Appeal Board and State Superior Court. As a result of settlement negotiations, which have been concluded, and additional technical studies, the Department concluded that the original hydrodynamic and water quality WASP5 model of the Murderkill River needed to be refined. Following refinement of the WASP5 model and evaluation of several loading scenarios, DNREC is proposing to amend the 2001 TMDLs Regulation.

### **7408 TMDLs 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 Total Maximum Daily Load regulation for nitrogen, phosphorous, and Carbonaceous Biochemical Oxygen Demand (CBOD).

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

**Article 1.** The total nitrogen load from the four point source facilities in the watershed (City of Harrington, Kent County Facility, Canterbury Crossing Mobile Home Park, and Southwood Acres Mobile Home Park) shall be limited to 406.3 pounds per day. The load allocation for each facility includes: City of Harrington (25 pounds per day), Kent County Facility (375 pounds per day), Canterbury Crossing Mobile Home Park (4.3 pounds per day), and Southwood Acres Mobile Home Park (2.0 pounds per day).

**Article 2.** The total phosphorous load from the four point source facilities in the watershed shall be limited to 27.3 pounds per day. The load allocation for each facility includes: City of Harrington (2 pounds per day), Kent County Facility (25 pounds per day), Canterbury Crossing Mobile Home Park (0.2 pounds per day), and Southwood Acres Mobile Home Park (0.1 pounds per day).

**Article 3.** The CBOD5 (5-day Carbonaceous Biochemical Oxygen Demand) load from the four point source facilities in the watershed shall be limited to 672.1 pounds per day. The load allocation for each facility includes: City of Harrington (33 pounds per day), Kent County Facility (625 pounds per day), Canterbury Crossing Mobile Home Park (9.6 pounds per day), and Southwood Acres Mobile Home Park (4.5 pounds per day).

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

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

**Article 6.** Based upon hydrodynamic and water quality model runs and assuming implementation of reductions identified by Articles 1 through 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 7.** 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 Whole Basin Management Program, Murderkill River Tributary Action Team, and other affected parties.

**Article 1.** The total nitrogen waste load from the Kent County Facility and Canterbury Crossing Mobile Home Park shall be limited to 755.3 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.

**Article 2.** The total phosphorus waste load from the Kent County Facility and Canterbury Crossing Mobile Home Park shall be limited to 62.7 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.

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

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

**Article 7.** Based upon hydrodynamic and water quality model runs and assuming implementation of reductions identified by Articles 1 through 6, 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)**