TOTAL MAXIMUM DAILY LOAD (TMDL) ANALYSIS

FOR

INDIAN RIVER, INDIAN RIVER BAY, AND REHOBOTH BAY, DELAWARE

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EXECUTIVE SUMMARY

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987, requires States to identify and list those waters within their boundaries that are water quality limited (303(d) List), to prioritize them, and to develop Total Maximum Daily Loads (TMDLs) for pollutants of concern. A water quality limited water is a waterbody in which water quality does not meet applicable water quality standards, or is not expected to meet applicable standards, even after application of technology-based effluent limitations for Publicly Owned Treatment Works (POTW) and other point sources. A TMDL sets a limit on the amount of a specific pollutant that can be discharged into a waterbody and still protect water quality. TMDLs have three elements: Waste Load Allocations (WLAs) for point sources, Load Allocations (LAs) for nonpoint sources, and a Margin of Safety (MOS).

Intensive water quality monitoring performed by the State of Delaware, the federal government, various university and private researchers, and citizen monitoring groups has shown that the Indian River, Indian River Bay, and Rehoboth Bay are highly enriched with the nutrients nitrogen and phosphorous. As the result, Department of Natural Resources and Environmental Control (DNREC) has included these waters on the State's 1996 and 1998 303(d) Lists and has established Total Maximum Daily Loads for nitrogen and phosphorous. These TMDLs are based on analyzing the effects of various pollution reduction scenarios while using a comprehensive and state-of-the-art hydrodynamic and water quality model (the Inland Bays Model). The Inland Bays Model was developed through a cooperative agreement between DNREC and the US Army Corps of Engineers - Waterway Experiment Station, Vicksburg, Mississippi with significant financial support from the U.S. Environmental Protection Agency.

The Total Maximum Daily Loads for the Indian River (segment DE140-004), Indian River Bay (segments DE140-E01 and DE140-E02) and Rehoboth Bay(segment DE280-E01) requires that:

1. All point source discharges to the Indian River, Indian River Bay, Rehoboth Bay, and their tributaries should be eliminated systematically.

2. The nonpoint source nitrogen loads from five tributaries in the upper Indian River should be reduced by 85 percent (from the base-line period of 1988 through 1990). These tributaries include Swan Creek, Iron Branch, Pepper Creek, Vines Creek, and Millsboro Pond. This will result in reducing nitrogen loads from these tributaries during a normal rainfall year from 1285 kilograms per day (2833 pounds per day) to 193 kilograms per day (425 pounds per day).

3. The nonpoint source phosphorous loads from these five tributaries in the upper Indian River should be reduced by 65 percent (from the base-line period of 1988 through 1990). This will result in reducing phosphorous loads from these tributaries during a normal rainfall year from 38 kilograms per day (84 pounds per day) to 13 kilograms per day (29 pounds per day).

4. The nonpoint source nitrogen loads from all remaining tributaries to the Indian River, Indian River Bay, and Rehoboth Bay should be reduced by 40 percent (from the base-line period of 1988 through 1990). This will result in reducing nitrogen loads from these tributaries during a normal rainfall year from 732 kilograms per day (1614 pounds per day) to 439 kilograms per day (968 pounds per day).

5. The nonpoint source phosphorous loads from all remaining tributaries to the Indian River, Indian River Bay, and Rehoboth Bay should be reduced by 40 percent (from the base-line period of 1988 through 1990). This will result in reducing phosphorous loads from these tributaries during a normal rainfall year from 36 kilograms per day (79 pounds per day) to 22 kilograms per day (49 pounds per day).

6. The atmospheric nitrogen deposition rate should be reduced by 20 percent (from the base-line period of 1988 through 1990). This will result in reducing the atmospheric nitrogen deposition rate from 765 kilograms per day (1687 pounds per day) to 612 kilograms per day (1349 pounds per day).

The result of hydrodynamic and water quality model runs has shown that through implementation of the above requirements, all water quality standards and targets in the Indian River, Indian River Bay, and Rehoboth Bay will be achieved with an adequate margin of safety.

Implementation of this proposed TMDL will be achieved through development and implementation of a Pollution Control Strategy (PCS). The PCS will be developed by DNREC in concert with the Department's ongoing Whole Basin Management Program and the affected public.