Office of the Registrar of Regulations,
Legislative Council,
State of Delaware

7400 Watershed Assessment Section

7404 TMDLs for Zinc in the Red Clay Creek

1.0 Introduction and Background

A TMDL specifies the maximum allowable mass loading of a pollutant (e.g., pounds per day) that can be delivered to a waterbody while still assuring that applicable water quality standards are met. A TMDL is composed of three components, including a Waste Load Allocation (WLA) for point source discharges, a Load Allocation (LA) for nonpoint sources, and a Margin of Safety (MOS) to account for uncertainties regarding the relationship between mass loading and resulting water quality. In simple terms, a TMDL attempts to match the strength, location, and timing of pollution sources within a watershed with the inherent ability of the receiving water to assimilate the pollutant without adverse impact.

On December 1, 1999, a Final TMDL Regulation for zinc in the Red Clay Creek was published in the *Delaware Register of Regulations* (**3 DE Reg. 806 (12/1/99)**). That TMDL Regulation was appealed by the National Vulcanized Fiber (NVF) Company to the State Environmental Appeals Board and the State Superior Court. The NVF Company owns and operates a manufacturing facility in Yorklyn, DE along the banks of the Red Clay Creek. The Department entered into a Settlement Agreement with the NVF Company in February of 2007, thereby resolving the appeal subject to the conditions of the Agreement. One condition of the Settlement Agreement was for the Department to propose an amended TMDL based upon a lognormal probability modeling approach. Such an approach provides an improved match between the strength, location, and timing of zinc mass loading to the Red Clay Creek with the inherent ability of the Red Clay Creek to assimilate the zinc loading without adverse impact. The lognormal probability modeling has been completed and the Department is now proposing to adopt an amended TMDL based upon the approach.

12 DE Reg. 1230 (03/01/09)

2.0 Amended Total Maximum Daily Load (TMDL) Regulation for Zinc in the Red Clay Creek, Delaware

Article 1. The TMDL for zinc in the Red Clay Creek shall be 55.93 pounds per day, measured as total zinc.

Article 2. The combined mass loading of zinc to the Red Clay Creek from NVF Yorklyn's permitted discharge 002 (i.e., WLA_{002}), plus the mass loading of zinc to the Red Clay Creek from contaminated groundwater beneath the NVF Yorklyn property (i.e., $LA_{g.w.}$) shall not exceed 25.17 pounds of zinc per day, measured as total zinc.

Article 3. The load allocation of zinc originating from upstream of Yorklyn (i.e., LA_{up}) shall not exceed 25.17 pounds of zinc per day, measured as total zinc.

Article 4. The margin of safety (MOS) for the TMDL listed in Article 1 has been set at 5.59 pounds of zinc per day, measured as total zinc. This MOS represents 10% of the TMDL and accounts for uncertainties in the overall TMDL analysis.

Article 5. DNREC has determined with a reasonable degree of certainty that water quality standards for zinc will be met in the Red Clay Creek once the mass loading requirements of Articles 1 through 3 are met.

3 DE Reg. 806 (12/1/99)
12 DE Reg. 1230 (03/01/09)