

Impaired Waters



Eutrophication can cause excessive plant and algae growth leading to further water quality problems.

Simply put, “impaired waters” are polluted waters. More technically, they are **surface waters** that do not meet water-quality standards for their designated uses, such as recreation, fishing, or drinking. Impaired waters could be suffering from excess nutrients, low dissolved oxygen, toxins, bacteria, heat, or any combination of these problems.

More than 90 percent of Delaware’s waterways are considered impaired. The state’s list of impaired waters, filed with the Environmental Protection Agency, includes 377 bodies of water that suffer from 11 different impairments, the most common of which are pathogens and nutrients (nitrogen and phosphorus). Most impairments come from non-point sources of pollution, which are difficult to control.

A 1997 federal court case required Delaware to develop pollution limits called “**Total Maximum Daily Loads**,” or TMDLs, for all impaired waters. A TMDL is the maximum daily amount of a pollutant that a body of water can absorb without violating water quality standards. A non-scientific definition for TMDL could be “pollution limit.”

Pollutants in Delaware waters are often chemicals, such as nitrogen and phosphorus from fertilizer runoff, but TMDLs could also be set for other pollutants such as bacteria, sediments, or even heat - anything that can injure a waterway’s natural health. Pollutants can come from specific “point” sources, such as sewage treatment plants, or from “nonpoint” sources, like runoff from lawns, farms, parking lots and golf courses. TMDLs have been established for the watersheds that drain into the Inland Bays, the Nanticoke River, the Appoquinimink River, the Christina River, the Murderkill River, Broad Creek, Red Clay Creek and White Clay Creek. As more than 90 percent of Delaware’s waterways are considered “impaired,” TMDLs will have to be set for many more waterways over the next few years. The deadline for setting them is 2007.

Setting pollution limits is just the first step toward improving water quality - the important next step is the development of “pollution control strategies,” which is the mission of the Tributary Action Teams. Citizens on Delaware’s Tributary Action Teams have been identifying ways to improve water quality in Delaware’s rivers and bays - partly in

response to the federal lawsuit, but also because they want to protect these valuable resources for recreational and commercial use, and for future generations. The Tributary Action Teams allow citizens to become involved early in the process and lets them sort out the difficult issues, wrestling with the trade-offs, and develop ways to reduce pollution. The Tributary Team concept, introduced in

Delaware by the Center for the Inland Bays, is an exciting opportunity for the citizens of Delaware to make a big difference in the health of their environment.

To learn more about Tributary Action Teams that may exist in your area, contact the Watershed Assessment Section at (302) 739-4590.

Glossary

Aquifer: a water-bearing geological formation that will yield water to a well or spring. Aquifers can be classified as confined or unconfined.

Atmospheric deposition: pollutants from the air falling on the land or water, sometimes at great distances from their original sources. Can be an important contributor to declining water quality.

BCHE (Bis[2-chloroethyl] Ether): A colorless, nonflammable liquid with a strong, unpleasant odor manufactured by humans for use in the production of pesticides and other chemicals.

Coastal Zone (Delaware): Approximately 4-mile wide area bordering the state’s shoreline encompassing approximately 270,000 acres.

Contaminant: Any element, substance, compound, mixture, or agent, other than a hazardous substance, which, after release from a facility and upon exposure of, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in the organism or their offspring.

Dioxins: A group or family of chemical compounds formed as an unintentional byproduct during combustion processes such as waste incineration, uncontrolled burning and some industrial processes such as paper manufacture. They are persistent in the environment and the level of their toxicities varies greatly.

Dissolved oxygen: The concentration of free oxygen (a gas) dissolved in water and most commonly expressed as milligrams per liter or parts per million. Adequate concentrations are necessary for aquatic life to survive.

Erosion: Wearing away of soil by running water, wind, or ice; erosion is the process by which the Earth’s surface is shaped and occurs even in remote, uninhabited areas at a slow rate (geologic erosion); of more concern is accelerated erosion caused by human activities.

Eutrophication: The enrichment of natural waters with inorganic material, especially nitrogen and phosphorus, such that they support excessive growth of plants/algae, and thereby reduce dissolved oxygen in these waters.

Ground water: Water beneath the Earth’s surface at varying depths, in reservoirs called aquifers.

Ground-water discharges: Discharge of a water table aquifer to streams, ditches, wetlands, or other waterbodies.

Hazardous waste: Any waste material that is potentially dangerous, including explosives, radioactive materials, and chemicals.

Methane: An odorless, colorless, flammable hydrocarbon present in natural gas and formed by decomposition of organic matter, for example, in landfills, marshes and swamps.

Non-point source pollution: Pollution of surface or ground water supplies originating from land-use activities and/or the atmosphere, having no well-defined point of entry.

Nutrients: Chemical elements, such as nitrogen and phosphorous, which occur naturally in water, soil and air, are vital to plants, and are added to fertilizers to aid growth of agricultural and other crops. Excess amounts entering water bodies cause deterioration in water quality by supporting an overabundance of plants/algae.

PCBs (polychlorinated biphenyls): Mixtures of chlorinated chemical compounds formerly used as coolants and lubricants in transformers, capacitors and other electrical equipment

before their manufacture was stopped in 1977 when evidence of their potential harmful health effects became known. PCBs persist in the environment and can accumulate in fish and marine mammals.

Point source pollution: Pollution of surface or ground water supplies at well-defined, usually manufactured points or locations; discharges of treated wastewater from municipal and industrial treatment plants are common point sources of pollution.

Pollution control strategies: Methods or strategies to meet pollution limits called Total Maximum Daily Loads (TMDLs) developed to improve water quality in the state’s impaired waterways.

Septic system: An on-site system designed to treat and dispose of domestic sewage. A typical sewage system consists of a tank that receives wastes from a residence or business and a system of tile lines or a pit for disposal of the liquid effluent remains after decomposition of the solids by bacteria in the tank.

Surface Water: Lakes, ponds, streams, rivers, and other water bodies, which lie on the surface of the land; may be partially or fully supplied by ground water.

TMDL or Total Maximum Daily Load: a calculation of the maximum amount of a pollutant that a water body can receive and still meet water-quality standards, and an allocation of that amount to the pollutant’s sources.

Watershed: An area of land that contributes runoff to one specific delivery point; large watersheds may be composed of several smaller “sub-watersheds,” each of which contributes runoff to different locations that ultimately combine at a common delivery point.

Water-Table: The top of the saturated portion of an unconfined aquifer.